REPORT

OF THE

FOREST SERVICE

FOR THE YEARS

1931 AND 1932

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REPORT

OF THE FOREST SERVICE FOR THE YEARS 1931 and 1932.

I. INTRODUCTION.

1. This report covers the financial years 1931/32 and 1932/33 from the 1st April to the 31st March. It seemed preferable to adopt this period since statistical and other appendices have been compiled in the past to correspond with the financial year and continuity is thus preserved. Moreover, reference to the calendar year is inappropriate as planting and nursery operations are at their height at the end of the calendar year, in the middle of the rainy season.

2. During the past two years consideration has been given to the proposal to form a separate forest department. Recently it has been decided not to proceed with the project, at all events, for the time being. The service has, however, functioned during the period under report as a quasi-independent branch subject to the directive control of the Director of Agriculture and Forests. Of two technically trained forest officers, the writer has been called upon to exercise the dual functions of Deputy Director of Agriculture and Forests and Chief Forest Officer, and, in addition, to serve as Acting Director of the Department of Agriculture and Forests for the major part of the last two years. Executive supervision has thus in a large measure fallen upon the Senior Forest Officer, Mr. Amihud Grasovsky, to whose energy in the field must be ascribed the effective continuation of a number of undertakings commenced at an earlier stage when the services of seven senior officers of the Department were available for at least part time control of forest work.

3. A number of officers of the junior service have made satisfactory progress in attaining a better knowledge of the practical and technical side of their duties from experience gained in the course of their work or through oral and written instruction. Nevertheless it has to be admitted that with the exception of two Forest Surveyors, the rest of the executive staff have had inadequate professional training; some are of a poor educational standard, while such vocational training as others have had has been agricultural or horticultural in character. Consequently they approach their work more from the viewpoint of of agronomists rather than from that demanded by economic forestry.

4. Representations have recently been made to increase the number of fully qualified forest officers as the first essential towards setting up a service adequate to the growing requirements of the country. During the past few years a number of expert commissions and individuals have stressed the importance of a progressive forest policy and have drawn attention to the Government's obligations in this matter. In the main their views have found confirmation in the more recent recommendations of the O'Donnel Commission. The cause of forestry has reaped a small resultant advantage through the increase of its annual vote for afforestation from £p. 3,000 to £p. 4,000.

5. Additional handicaps to ordered forest development are the inability so far experienced by the department concerned to deal with the settlement of titles to forest areas and the consequential impossibility of providing for the determination and definition of forest titles and rights. Under such circumstances systematic forest management is out of the question, while so long as indefeasible title to forest reserves is not established, increased expenditure on their improvement cannot be advocated with full confidence. On the other hand the need for an expanded programme of afforestation has been amply demonstrated by the experience of the last two years, notably in regard to the increased imports of forest produce, the diminishing supply of local produce for domestic needs, and the enhanced importance of forest planting to conserve the rainfall, and prevent soil erosion and sand-drift.

6. A sericultural section has been operated as formerly under the control of the forest service. The report of the Sericultural Instructor is therefore attached.

7. The forest service has been also concerned with the planting and lay out of the new Government House Grounds at Jerusalem.

II. FOREST RESERVATION.

8. Eighteen forest reserves were proclaimed covering 9,779 dunams bringing the total number to 220 with an aggregate area of 689,335 dunams or approximately 270 square miles equal to about 2 1/2 per cent of the country. In some instances there has been opposition to the constitution of reserves, objectors claiming that the land is required for cultivation of cereal and orchard crops. In other areas the inhabitants of villages themselves have welcomed the constitution of reserves, having learnt from experience the advantages they obtain through the preservation of their principal source of supply of fuel and timber for domestic requirements and of pasturage for their flocks and herds. The reserves proclaimed during the period under report are situated in the Nazareth, Tulkarm, Haifa, Acre, and Hebron Sub-Districts. Those taken up in Nazareth and Tulkarm consist of waste hill-sides unsuited to agriculture and are already being reforested. The other reserves have been taken up for the protection and improvement of the existing forest growth. The present distribution of reserves is shown in the relevant appendices. They are located principally in the hilly areas in the northern half of the country where owing to a higher rainfall and a scantier population wooded growth has best survived. In the south the reserves are restricted to the hill country; with the exception of two in the sand dune area on the coast and one in the riverain belt in the Jordan Valley. In the Beersheba district such forest vegetation as occurs consists of a narrow strip of shrubs and small trees along the sides of „wadis". This, incidentally, is rapidly disappearing and the shortage of fuel is becoming an acute problem in this area.

III. DEMARCATION AND SURVEY.

9. The two Forest Surveyors have been fully occupied during the period under report in the following operations, details of which are set out in appendices 3, 4, 4a, 5, 6, 7, 8 and 9.

(a) Survey and detailed demarcation of reserves gazetted some years ago at a time when it was not feasible to delimit boundaries with the accuracy now required.

(b) Survey of areas newly proposed for reservation.

(c) Survey of departmental plantations.

(d) Survey of annual coupes for exploitation.

(e) Preparation of reserve proclamations and schedules.

(f) Preparation of maps and sketches and copies for distribution to forest personnel and other departments.

(g) Demarcation of boundaries of reserves, cultivated plots inside reserves, plantations and coupes.

(h) Maintenance of land settlement progress diagrams and of schedules of state lands disclosed during settlement.

(i) Preparation of estimates for fencing and small buildings.

10. Detailed procedure for the survey, delimitation, and constitution of reserves, and the maintenance of boundaries, has not yet been prescribed by statutory regulation, but has been gradually built up by administrative action. Improvements suggested during the progress of the work have been gradually introduced the successive steps being now as follows:

(i) Preliminary proposals for reservation are made by the Senior Forest Officer, or Forest Ranger, and in some instances by the interested villagers themselves. Areas are selected either because they are deemed better suited to afforestation than agriculture or because they carry forest growth capable of improvement by protection and planting, or because they require to be afforested to prevent soil erosion, sand-drift, water wastage, or other forms of damage.

(ii) The Forest Surveyor makes a reconnaissance of the area and prepares a sketch map.

(iii) Meetings of the Mukhtars and Notables and villagers are arranged on the spot, when claims to cultivated plots, adjoining lands, boundaries, etc. are considered and recorded by the Forest Surveyor in a report.

(iv) The proposed reserve is then surveyed and the boundaries are demarcated by iron bolts concreted into rocks or by angle-iron land marks, according to the nature of the terrain. The bolts and land marks are numbered during the survey and the numbers are marked in black paint on boulders located as near as possible to the mark.

(v) Survey is carried out with a plane table and telescopic alidade and the results are plotted on Field Sheets $\frac{1}{10000}$ scale reproduced by the Forest Surveyor in the Department of Surveys for all localities in which that department has completed survey. For areas such as Hebron for which no Field Sheets exist, sufficiently accurate sketches are made by prismatic compass and the results plotted on enlargements of the Palestine Exploration Fund

Map. Internal plots of cultivated land are surveyed and demarcated at the same time and the names of claimants recorded.

(vi) The Forest Surveyor next prepares reserve proposals including the name and serial number of the reserve, its situation and area and its boundaries referred to maps, numbered marks, and natural features, the number, area, and names of claimants, and a list of cultivated plots, with a note to the effect that these plots are excluded from reservation. (In the last connection the view is taken that the forest service is not concerned with the genuineness of the cultivator's claim to the plots.)

(vii) The papers consisting of the Forest Surveyor's report, the draft reserve proposals in detail, and the map, are then referred to the District Commissioner in order that he may be satisfied that there are no substantial objections.

(viii) When no objections are returned the papers are forwarded in the three official languages in the form of a proclamation and schedule for publication in the Official Gazette Where objections are raised a final inspection is made on the spot by the District Officer and the Forest Ranger and Forest Surveyor, in the presence of the claimants and the Village Mukhtar. If it appears that the claims advanced are warranted, the necessary adjustments are made.

(ix) After publication reprints are obtained, copies of the maps are printed in a press by the Forest Surveyor, and these are circulated to Forest Rangers and Guards, to the Directors of Lands, and Surveys, and to District Commissioners and District Officers.

(x) Boundaries are inspected once every three months by Forest Rangers and Guards who are required to submit Boundary Inspection Reports, and to secure the repainting of numbers and the replacement of marks, as may be necessary.

11. The procedure described follows in principle the policy advocated by Sir Ernest Dowson in 1924 for „the State protection of woodland growth in areas of potential national forests rather than one of immediate determination of the limits of national ownership provided that the claims of the nation to such ownership could be reasonably safeguarded against encroachment and the recognition of dubious competing claims pending systematic survey and settlement".

Land settlement has not yet in fact been applied to forest reserves being confined to date to agricultural and horticultural land in the plains. In the meantime the best guarantee against operative encroachment on existing forest and on land destined in the long run to become forest lies in their survey, demarcation, and reservation, and protection as reserves under the forest law. Efforts to bring forest reserves within the immediate scope of settlement, first made in 1928, or alternatively to arrange separate procedure for forest settlement have so far proved abortive. In the meantime the procedure lacks finality and statutory sanction as regards details. So long as indefeasible state title to forest reserves is not established, so long is there a risk in incurring expenditure on their protection and improvement; and so long as forest rights are not determined, the more they will tend to multiply and the more complicated will their determination become.

12. Despite, however, the inherent disadvantage of existing procedure it is contended that pending the arrival of settlement in forest areas or the setting up of special machinery for forest settlement, survey, demarcation, and reservation should proceed as rapidly as available resources permit. These operations have been completed in the Haifa area and are nearly complete in the Hebron District and Ramleh Sub-District. Tulkarm, Nazareth, Acre, Jenin, Tiberias, and Safad Sub-Districts remain to be done and will probably take some three years to complete.

IV. PROTECTION.

(a) *Protection against Man.*

(1) CHANGES IN THE FOREST LAW.

13. There have been no changes in the law. Amendments of the Ordinance are called for to provide for the protection of privately owned natural forest and artificially formed plantations at the request of owners, particularly in view of the increased area planted by private agency. This question was considered when the 1920 Ordinance was replaced by the Ordinauce of 1926, it being decided that the official forest service could not be involved in the complications likely to arise in the control and management of private forest. In the writer's view, however, the simple protection of private forest against illicit felling, encroachment, and grazing, should be provided by the State at the expense of owners and there are no insuperable objections to this course. Proposals to this end have so far failed to materialise because private owners have desired to appoint their own nominees as guardians with the powers of official forest guards and because the boundaries, title deeds, taxation of, and rights of third parties in respect of private forests are not yet determined.

14. The Forests Ordinance contains no provision regarding the removal of or interfe-

rence with boundary marks. Prosecutions for offences of this nature are at present brought under the Survey Ordinance by Forest Surveyors. The procedure is cumbrous and inconvenient.

(II) FOREST OFFENCES.

Particulars of forest contraventions are shown in appendices 38 and 39. There has been a substantial increase in the number of persons prosecuted. This has risen from 411 in 1930 to 886 in 1931/32 and 1,460 in 1932/33. The average fine inflicted by the Courts has decreased during the three years from £P. 1 to 460 mils. There has also been a decrease in the number of cases compounded and the amount collected as compensation, the figures being :—

	No. of Cases.	Compensation.
		£p. Mils.
1930/31	(No. figures)	241,050
1931/32	22	18,110
1932/33	12	15,450

16. Formerly forest prosecutions were conducted by the Police Department. This arrangement having been cancelled, Forest Rangers after some instruction by the Police have been made responsible during the two years under report for the conduct of prosecutions. In some cases Forest Guards are required to serve summonses on offenders. Forest Rangers have had, however, no training in Forest Law and most of them are little equipped educationally or technically for work of this character. Neither is there available at present a text book dealing with the subject. Some instruction has been afforded by the issue of service circulars and as a measure of control, a departmental proforma report of forest contraventions has been introduced which is completed and rendered to the headquarters office showing particulars of every offence brought before the Courts by the Forest Rangers at the time the offence is detected.

17. Cases of land encroachments have risen from 39 to 71. These generally occur at night and are difficult to prove where reserves have not been surveyed and demarcated in detail. The need to accelerate the work of Forest Survey is thus emphasised particularly as Magistrates often refuse to convict where the boundaries of reserves are only vaguely defined.

18. Land encroachment in areas where forest reserves have not been constituted is general, whether the land is potentially forest land or not. The view is apparently gaining ground that cultivators should be encouraged to break up waste land for cultivation in reversion to the practice which obtained in Turkish times and prior to the enactment of the Mewat Land Ordinance under the present Administration. This Ordinance prohibits the practice mentioned but has remained inoperative. Where land of this type carries forest growth, regulations under the Forest Ordinance prohibiting the felling of „protected" trees may be invoked, and have, in fact, in the past prevented the wholesale destruction of scrub forests in village lands, since the component species are mainly „protected" trees. Latterly offenders have adopted the expedient of felling all but protected trees and cultivating the surrounding land. The result is that though "protected" trees are left the areas lose their identity as forest. The truth of the matter is that there is a misconception of the aims and objects of the forest service which is held to be a spoliator of village lands. This is not the case and in practice the forest service claims only land regarded as potentially forest land. The claims of agriculture are admittedly paramount and it is conceivable that even parts of declared forest reserves may have ultimately to be given up to agriculture. But there is need for the exercise of balanced judgment in dealing with the claims of agriculture and forestry wherever they conflict and there are many considerations to be taken into account. In the writer's view the proper solution lies in land settlement followed by land classification, the latter being dependent on expert examination of all the factors.

(*b*) *Protection against Animals, Insects, and Plant Diseases.*

(I) GRAZING.

19. Despite the enormous damage caused annually to forest growth by the grazing of domestic animals, restrictive action has been confined to the closure of plantation areas and annual coupes. The inadvisability of more drastic measures under present circumstances has been accentuated during the past two years owing to the scarcity of rainfall, deficient pasturage, and poverty among stock-owners. It is felt that prohibitive action must be a gradual process which can only be introduced with discretion as advance is made in improved stock breeding, the production of fodder, technical research in pasturage improvement, and the determination of grazing rights. Steps are being taken by the agricultural and veterinary services to raise the standards of animal husbandry as regards feeding and breeding practices and in course of time progress in these directions should affect the question of forest grazing.

During the year 1932/33 the shortage of pasturage became so acute as to necessitate the issue of fodder loans; the reduction of grazing fees payable by strangers' cattle in forest reserves; and the restriction of entry to Palestine by flocks from Trans-Jordan. Villagers were also encouraged by the forest service to gather grass by hand and in several instances took advantage of the privilege. Two areas only were declared „closed forest areas", both being lands in course of afforestation, viz. part of the Balad Esh Sheikh Reserve in the Haifa Sub-District amounting to 1,100 dunams, and the Abu Liwez Reserve in the Ramleh Sub-District amounting to 566 dunams. The total number of areas closed to date is 17 comprising 32,875 dunam.

20. In 1930 a census made by the veterinary service disclosed the following enumeration of grazing animals: —

Horses	13,825
Mules	5,304
Donkeys	76,858
Camels	25,341
Cattle	146,397
Buffaloes	5,247
Sheep	252,773
Goats	440,132
TOTAL	965,877

It is stated that these figures are probably an underestimate. To them must be added an unknown number of animals which enter Palestine during varying periods of the year for grazing from the Lebanon, Trans-Jordan, and Sinai, besides animals engaged in the transport of produce to and from these territories. After making allowance for hand feeding and grazing on stubbles it will be obvious that the extent to which forest pasturage has to support animal grazing during many months of the year is exceedingly high. Animals licensed by the forest service to graze in forest reserves are shown in appendices 26 and 27 under the categories of rightholders' and strangers' cattle and according to the distribution in the several forest ranges. The decrease in the aggregate figures from 91,225 to 61,633 is unaccountable and it is almost certain that a large number of rightholders' and strangers, animals are unlicensed. It is, however, known that owing to two years drought the mortality of local and foreign stock has been considerable.

21. Grazing capacity in different localities is a factor which is little understood at present. The distribution of grazing in forest reserves is certainly uneven, some being over-and others under-grazed. This problem as well as the queston of improvement of forest pasturage await research.

22. Fencing of departmental plantations is shown in appendix 8. The policy pursued is to fence small plantations or those which are adjacent to main roads; and to ensure protection of large areas through unmounted forest guards who live on the spot.

(II) DISEASES AND PESTS.

23. Depredations and loss of increment in forest reserves among species of indigenous character are matters which have not been seriously studied as yet. Such investigations as have been made under this head are mainly connected with losses in nurseries and plantations. Insect pests are referred to the Government Entomologist for identification and advice as to remedial measures, and diseases of forest plants to Dr. Reichert of the Jewish Research Station at Rehoboth.

24. During the period under review the following have been brought to notice:—

Pest or Disease	Nature of Damage	Locality
Termites	To Railway Sleepers.	Sinai Railway.
Moles.	To roots of Pinus canariensis.	Private Plantations, Roshpina.
"	do	Bab el Wad Departmental Plantation.
"	To seedlings of Juglans regia.	Jerusalem Nursery.
"	To several species.	Balfour Forest, Ginegar.
Fungus (Unidentified)	To stem and bark of Juglans regia.	Jerusalem Nursery.

Pest or Disease	Nature of Damage	Locality.
Icerya purchasi	To seedlings af Acacia Cyanophylla.	Acre Sand Dunes.
" "	To seedlings of Acacia lophanta.	do
Icerya purchasi	To seedlings of Laurus nobilis.	Jerusalem Nursery.
do	To seedlings of Pittosporum undulatum.	do
Retithrips aegyptiaca.	To leaves of Acacia cyanophylla.	Tiberias Nursery.
do	To leaves of Melia Azedarach.	do
do	To leaves of Schinus molle.	do
Aphis.	To leaves of Robinia pseudo-acacia.	Jerusalem Nursery.
Zeuzera pyrina.	To stem and branches of Fraximus americana.	do
Unidentified.	To trees of Pinus halepensis.	Private Plantations, Mt. Carmel.

25. In connection with the extension of citrus and banana cultivation and the spread of Black Scale (Chrysomphalus ficus Kil) a list of host plants including forest trees and flowers was drawn up in conjunction with the Government Entomologist with a view to limiting their movement and planting under conditions likely to cause spread of the scale. The forest trees include:

Cupressus
Quercus
Laurus
Bauhinia
Ceratonia
Magnolia
Ficus
Morus
Eucalyptus
Palmae
Salix
Tamarix
Zizyphus
Melia azederach
Juglans

(*c*) *Damage from Other Causes.*

(I) FIRES.

26. As forest reserves are mainly composed of hardy evergreen species there has been little damage from forest fires, and owing to the abundance of cultivated plots, roads and tracks, there has been no necessity for special expenditure on fire traces or fire fighting measures and equipment. Seven fires were reported of which the most serious was at the Wadi-el-Kurn Forest Reserve and spread over an area of 12 dunams. The total damage estimated at £P. 1 per dunam was £P. 193. In appendix No. 44 are recorded particulars of fires reported.

(II) SOIL EROSION AND WATER RUN-OFF.

27. No instances of damage to forest soil in forest reserves and plantation were reported and there is little doubt that protection of existing growth and reforestation are exercising a favourable influence on soil conservation wherever reserves have been taken up and plantations formed. In certain localities cultivated fields, orchards, roads and bridges, railway tracks and even villages are undoubtedly protected from serious consequences through the retention of forest growth on adjoining hills. Scientific investigations to determine the losses of soil and water and the damage caused by erosion have never been undertaken nor are there in existence even approximate data regarding the extent of damage caused from these factors.

28. It is, however, a matter of common observation that such damage is both serious and widespread, and, in the writer's view, will be likely to increase owing to the vast extension of cultivation on hillsides now in progress when normal rainy seasons re-occur. During the last two seasons the rainfall has been considerably below average with light showers of short duration but unusually early heavy showers in September and October, 1932, created much havoc. For example, damage was caused to the Jericho main road by torrents descending the gullies from the unforested hills repairs being required at a cost of some £P. 14,000. In the Wad El Kuff valley the slopes of which have been cultivated only during recent years, the road was badly damaged; some 60,000 plants in tins were carried away from the forest nursery; and animals were drowned. Damage to the extent of £P. 2,000 was caused to the main road near Nablus. At Bab El Wad a considerable area of cultivated land was covered to a depth of from 1 to 2 metres with soil and detritus brought down from adjoining hills and the banks of wadis were further eroded with consequent loss of cultivation land. Damage was also noted in orchard lands on inadequately terraced hill slopes.

29. Although as already indicated the data are entirely insufficient for an appreciation of the full extent of the losses caused, they are probably far greater than commonly supposed, and serve to indicate the necessity for the protection of forest vegetation or the reafforestation of the upper slopes in the hill country, the employment of counter erosion measures, and the exercise of discrimination in converting hilly lands to cultivation of field crops or orchards.

(III) SAND-DRIFT.

30. Sand-reclamation has proceeded as far as funds have permitted at Gaza, and Acre at Government plantations and work of similar character has been continued by the Palestine Jewish Colonisation Association on the Caesarea Sand-dunes and by the Railways Department along the Haifa-Kantara railway line.

31. The expansion of the town of Tel-Aviv on land which formerly consisted of a dune formation, the building of railway workshops and colonists' houses on the Acre Dunes, and the construcion of dwellings in progress at Gaza are features of interest and bear out the prediction made several years ago that in certain instances the coastal dunes were capable of development as residential areas.

32. The sand-dune problem, as a whole, however, remains in the experimental stage and large scale reclamation has not yet been attempted. Owing to the drought of the past two years sand drift conditions have tended to become more acute, owing not only to the prolonged dessication of the dunes themselves, but also to the shortage of pasturage caused by the drought of two years which has induced flock owners to invade the dunes for fodder plants, and so accentuate sand movement.

33. Interior sand-drift, reported for the first time this year, caused considerable trouble on the Beersheba-Asluj road and serves to accentuate the gravity of the general question.

V. NATURAL REGENERATION.

34. Reproduction from coppice regrowth continues to be the principal factor in the regeneration of hill forest reserves, seedlings being largely non-existent owing to excessive grazing. As no working plans have been introduced and forest reserves are felled under a system of simple coppice by area, there is nothing to report on regeneration from seed resulting from silvicultural treatment. Reproduction from seed has been observed in plantations of Acacia cyanophylla on dunes at Acre and Gaza, and in natural woods of Pinus halepensis in the hill areas of Acre Sub-District.

VI. SEEDS AND PLANTS.

(a) Seeds.

35. Dependence on imported seeds becomes less necessary from year to year, local supplies of the most commonly used species being increasingly available as plantations develop and trees attain seed-bearing age. Seeds of certain species can now be collected in

sufficient bulk to meet current requirements of departmental nurseries and plantations, an exception being Pinus pinea which has still to be obtained from the Lebanon. Seeds of exotic species are obtained by purchase or through the medium of a seed exchange bureau. Details of seed transactions with foreign correspondents are given in the report of the Botanical and Silvicultural Assistant, while lists of the seeds introduced and issued will be found in appendices 40 to 44.

(*b*) *Plants.*

36. Eleven departmental nurseries were maintained during 1931/32 and twelve during 1932/33, the distribution being shown in appendices 10 and 11. The production of plants was 957,465 in 1931 and 1.029,264 in 1932. (See appendices 12 and 13.) In both years there were considerable losses due to lack of water (Jerusalem Nursery) and "damping off" and frost; at the Wad El Kuff nursery some 60,000 plants in half petrol tins were carried away by floods, while at the Bab El Wad nursery large numbers of plants were damaged through being buried under silt brought down from the hills after a cloud burst. The Nazareth nursery has been extended by the construction of new terraces and the Wad El Kuff nursery has been slightly enlarged; the Tiberias nursery has been considerably enlarged after clearing up the soil and laying down a number of new nursery beds.

37. In accordance with instructions received Plants were purchased as follows from Girls Farms of the Federation of Jewish Labour:

1931/32	£P. Mils
104,098 plants at £P. 4.500 per 1,000	468,441
Packing at 500 mils " "	52,049
Transport by road.	34,000
TOTAL:	554,490

1932/33	£P. Mils.
258,021 plants at £P. 1.500 per 1,000	387,031
Packing at 500 mils " "	78,976
Transport by road.	32,306
TOTAL:	498,313

These purchases were made as a measure of Government assistance to the Girls Farms of which there are eight at seven different centres. The purchases were charged in both years to the vote for Afforestation. This was increased under Special Warrant in 1931/32 by £P. 800 to cover the cost of the plants and their packing and transport, but no additional provision was made for the cost of planting. In 1932/33 the afforestation vote having been increased by £P. 1,000 no extra provision was made either for the cost of the plants nor for their planting. It will be noted that the price paid was reduced in the second year from £P. 4.500 mils per thousand to £P. 1.500 to bring the figures into nearer relation to costs incurred by Government at its own nurseries.

38. Costing accounts in nurseries present a number of difficulties owing to the different requirements of the several species of plants as well as the different conditions of climate, soil, and water, obtaining at the actual nurseries. Moreover, attempts made in previous years to ascertain costs of production of forest plants have been complicated by the fact that forest nurseries were also engaged in the production of fruit trees. In 1932/33 an effort was made to keep more accurate figures, the results of which are shown in appendix 19. Omitting the figures for the Jerusalem nursery which are very much higher than elsewhere owing to the high cost of water and soil and to the attention devoted to experimental work and the propagation of exotics and ornamentals for special purposes, the average cost per 1,000 plants was £P. 1.180 mils. As already stated there were a number of losses; the figures also include mulberries which cost rather more to produce than forest plants, and a number of plants carried over for a second year. Taking these factors into consideration it would appear that the commoner plants principally used in afforestation, Pines, Cypresses, Acacias, and Eucalyptus could be raised at favourably situated nurseries at from 500 to 750 mils per thousand.

39. The distribution of plants is detailed in appendices 16 and 17. Very few were sold and larger numbers were issued gratis to the public than in previous years. This was due to the fact that owing to the purchases of plants made from the Girls Farms, the forest service found itself with more plants than could be planted with the funds available. In fact despite the increased numbers issued free, there was a balance of some 71,000 at the end of the 1932/33 planting season left at Government nurseries.

40. Details of olive propagation are shown in appendices 34 and 35. In order further to encourage olive planting a special credit of £P. 240 was made available during the rainy season for the free gift of wild olive suckers from forest reserves to cultivators resident in areas where no wild olives exist. A total of 45,360 suckers were extracted from the El Mughair Forest Reserve in the Jenin sub-district. Of these 27,646 were transported to

Jerusalem, Ramallah, Jaffa, Ramleh, Gaza, Beersheba, Tiberias, and Beisan and issued to applicants. 15,604 were issued to horticultural stations and forest nurseries for planting and subsequent budding; and 2,110 were sold.

41. Increased attention has been directed to the production of carob seedlings at government nurseries in view of the value of the bean as a food stuff for animals and the adaptability of this species to local conditions.

42. 41,734 mulberry plants were raised at forest nurseries for free distribution and departmental planting.

43. From statistics collected in April 1932 it appeared that there were some 32 private nurseries engaged in the production of forest plants, beside fruit trees and ornamentals and that their production of forest plants alone was about 1 million.

VII. AFFORESTATION.

(a) Government.

44. Weather conditions during the two seasons have been unfavourable owing to reduced rainfall and there has been a considerably increased percentage of mortality of plants at departmental plantations. Appendices 5 and 6 indicate the distribution and area of plantations. These comprise hilly land, plain land, sand-dunes, swamp, and arid localities and are distributed in all parts of the country except Beersheba where afforestation has not yet been attempted. Planting operations carried out during the past two years are summarised below:

(1) SAFAD CASTLE (Safad sub-district).

This occoupies 30 dunams and is situated on an old ruin in Safad town area on poor calcareous soil. The district enjoys a high rainfall, averaging 806 millimeters over a period of 9 years. In 1931/32 blanks were replanted with 2,000 transplants of Pinus halepensis. There was a 50 % mortality ascribed to frost. In 1932/33 further 2,500 Pinus halepensis were planted with better results.

(2) MADDAD NORTH. (Tiberias sub-district).

This area is a forest reserve in two sections comprising 490 and 48 dunams of hilly land. In 1931/32 57 dunams were replanted and 58 dunams of new planting commenced. In 1932/33, 50 dunams were replanted and 116 dunams newly planted. The species used were Acacia cyanophylla, Ailanthus glandulosa, Melia azedarach, Parkinsonia aculeata, Celtis australis, and Robinia pseudoacacia.

(3) TIBERIAS SOUTH. (Tiberias sub-district).

This plantation comprises 1,146 dunams situated on hills west of the Sea of Gallilee. Planting was originally commenced in order to stop soil erosion. The soil is generally poor consisting of basalt rock or weathered basalt, the rainfall is low and summer temperatures are high. In 1931/32 176 dunams were planted and in 1932/33 150 dunams. Species employed were the same as those for (2) above with the addition of Cercis siliquastrum.

(4) ARD EL JARDON. (Tiberias sub-district).

This plantation comprises 188 dunams of land similar to Tiberias South, and carries some natural growth of Zizyphus lotus. In 1932/33 39,500 plants of Acacia cyanophylla, Melia azedarach, and Ailanthus glandulosa were planted.

(5) BIR EL EMIR. (Nazareth sub-district).

This area comprises 85 dunams of rocky hill top with soil distributed in small plots or pockets. It was planted or sown by direct sowing in lines or seed spots with a number of species. The best results were obtained with Pinus halepensis, Pinus pinea, Acacia cyanophylla, Robinia pseudoacacia, and Ailanthus glandulosa. In 1932 the area was fenced and blanks filled with some 2,000 plants. The plantation is now fully stocked, no further planting operations being required.

(6) NAZARETH RESIDENCY GROUND. (Nazareth sub-district).

This area covers 94 dunams of which one section is a forest nursery, one a fruit orchard, one an arboretum, and the balance a forest plantation. The latter covers 24 dunams of which about 12 were planted with Acacia cyanophylla some years ago. The trees have been coppiced and the fuel sold. The rest of the area consists of Eucalyptus rostrata, a plot of Pinus pinea from direct sowing in lines; and a plot of Pinus halepensis and Cupressus sempervirens in mixture was planted in 1931/32 to complete the plantation.

(7) BAHARAN. (Nazareth sub-district).

The total area of this plantation is 663 dunams. In 1931/32 32 dunams were replanted and 118 newly planted, 40,000 transplants being used. In 1932/33 80 dunams were replanted and 40 dunams newly planted with 35,000 plants. The species used were Pinus halepensis, Pinus pinea (from direct sowing), Cupressus arizonica, Cupressus macrocarpa, Eucalyptus globulus, Eucalyptus rostrata, and a few plants of Cedrus atlantica, Ailanthus glandulosa, and Aleurites fordii. 20 dunams were planted with Juglans regia which is making excellent growth.

(8) SERTABA (Nazareth sub-district).

The plantation area covers 302 dunams, the planting of which was started in 1926/27. Earlier planting gave poor results. In 1931/32 90 dunams were sown to Pinus pinea and Quercus aegilops, the ground being ploughed where possible. Results were good considering the poor rainfall. In 1931/32 50 dunams were resown and 70 dunams of new land were sown with the same species.

(9) JABAL AQABY. (Nazareth sub-district).

This area covers 316 dunams of rocky-hill slope proclaimed a forest reserve in 1932. Planting was first started in 1932/33 the whole area being completed. 80,000 plants were used, principally Pinus halepensis. Despite the shortage of rain this year and a hot summer results to date are very promising.

(10) ACRE SAND DUNES. (Acre sub-district).

The area is 609 dunams and was taken up in 1922 as an experimental station for the reclamation of sand dunes. A forest nursery has been in existence on the area for some years, for the supply of plants for the dunes and other purposes. In 1932/33 51,000 plants were raised, of which 35,000 were planted on the dune area by way of filling up blanks and testing different species under conditions improved by the reclamation work of several years. Among the varieties planted were Acacia arabica, cyanophylla, cyclopis, and pycnantha, Ailanthus glandulosa, Bauhinia, Brachychiton, Casuarina, Cercis siliquastrum, Cupressus arizonica, benthami, horizontalis, Eucalyptus cornuta, lehmani, robusta, Grevillea robusta, Morus alba, Parkinsonia aculeata, Pinus canariensis, halepensis, insignis, maritima, and pinea, Robinia pseudoacacia, Quercus aegilops, and Tamarix.

(11) ACRE STUD FARM. (Acre sub-district).

A small plot of deep sandy loam soil was planted with a few hundred Pinus halepensis, canariensis, insignis and pinea, in order to test the comparative rate of growth of these species on somewhat better soil.

(12) BALAD ESH SHEIKH. (Haifa sub-district).

The total area is 1,000 dunams situated on the Carmel Hills. Planting was commenced in 1930 and continued during 1931, 32, and 33. In 1931/32 resowing of Pinea was carried out over 230 dunams and 150 dunams were newly sown. Pinus halepensis had been planted in previous years. Both species are doing well. In 1932/33 Pinus pinea was resown over an area of 95 dunams and 221 dunams were newly sown. 1,450 transplants of Pinus halepensis, Ceratonia siliqua, and Curessus sempervirens were planted. An interesting feature was the germination of Pinus pinea seed during the second season which had failed during the previous season owing to drought indicating the necessity for sowing either in advance or at the very commencement of the rains.

(13) KAKOUN. (Tulkarm Sub-district).

This area consists of low-lying partly swampy land which carries a natural growth of fodder grass and is managed primarily for the production of grass fodder for the Kadoorie Tulkarm Agricultural School. The total area is 454 dunams. A belt surrounding the swamp has been planted with Eucalyptus rostrata which has made excellent growth. In 1932/33 the belt was extended by the plantation of 3 dunams of Mulberry, 2,000 Eucalyptus rostrata, 4,000 Acacia cyanophylla. and 4,000 Melia azedarach.

(14) RAS AMER WEST. (Tulkarm sub-district).

This plantation covers 96 dunams and forms part of a forest reserve of 2,078 dunams proclaimed during 1932/33. Planting was commenced during the same season, 13,000 plants of Pinus halepensis and Eucalyptus rostrata being used, and 5 kilos of Pinus pinea were sown. Rainfall was poor and planting was delayed by hot winds. Mortality has been consequently high.

(15) BAB EL WAD. (Jerusalem sub-district).

This plantation comprises three hill forest reserves adjoining the main road from Jerusalem to Jaffa, with soil and climatic conditions typical of the Judaean plateau. The total area is 2,402 dunams. Planting was first commenced in 1926/27, and has been continued during the intervening years. A number of different species have been used, selected partly in accordance with the soil conditions, and partly to test the suitability of exotics. Pinus halepensis and pinea and Acacia cyanophylla (on poor soil) Cupressus sempervirens (horizontalis and verticalis), and Casuarina equisetifolia have been principally used, but there are also plots of exotics such as Cupressus arizonica and macrocarpa, Pinus insignis and canariensis, which were planted during the first two years and should afford valuable data in due course. In 1931/32 166,000 seedlings and transplants of Pinus halepensis and Cupressus sempervirens were planted and in 1932/33 135,000 of the same species including 20,000 Acacia cyanophylla. Seed of Pinus pinea, Acacia cyanophylla, and Ailanthus glandulosa was also sown over blanks. Owing to deficiency of rain mortality during the past two seasons has been as high as 60 %. Given adequate rains next season it should be possible to complete planting. Thereafter this plantation should yield reliable data as to the possibilities of growing timber of indigenous and several exotic species under the conditions of this locality.

(16) KHAN EL AHMAR. (Jerusalem sub-district).

This plantation covers 27 dunams and is situated close to the main road about half way between Jerusalem and Jericho. The entire neighbourhood is a tree-less waste with a small rainfall probably less than 10 inches. Large numbers of indigenous and exotic xerophilous species have been sown or planted experimentally for several years and some work has been done to retain moisture in the soil by terracing and trenching. During the past two years the rainfall was negligible and several species, including indigenous varieties which had survived for two or more summers, perished from drought. Species which survived through the past two years were Balanites aegyptiaca, Acacia cyanophylla, Eucalyptus salmanophloia, Retama roetam, Cupressus arizonica, and Parkinsonia aculeata. Untried species planted during the 1932/33 season were: Acacia cyclopis, Acacia saligna, Caesalpinia spinosa, Eucalyptus amygdalina, Eucalyptus leucoxylon, Myoporum montanum and Prosopis juliflora.

(17) KHAN EL ABYAD. (Jerusalem sub-district).

This is a small plantation of 7 dunams in two plots adjoining the Jerusalem — Jericho road taken up in 1932/33 for experimental planting to see whether tree growth can be established in this locality with a rainfall probably not more than 15 to 20 inches. Species planted were Pinus halepensis, Ailanthus glandulosa, Cupressus arizonica, Prosopis juliflora, Robinia pseudo-acacia, Eucalyptus leucoxylon, Ceratonia siliqua, Prunus amygdalus, Schinus molle.

(18) UM SAFA. (Ramallah sub-district).

This is a hill forest reserve which contained an open natural growth of Pinus halepensis and Quercus coccifera and numerous blank areas of varying size. Planting and sowing was commenced in 1924/25 and has been extended each year, indigenous and exotic species being used. A small forest nursery watered from a spring in the rocks is attached to the plantation. In 1931/32 23,816 plants of Pinus halepensis and Cupressus sempervirens were planted, and in the following year 15,570 of the same species. Experience at this plantation has amply demonstrated the possibility of using plants of Pinus halepensis with naked roots grown in nursery beds.

(19) WAD EL KUFF. (Hebron sub-district).

This plantation covers 828 dunams situated on both slopes of the hills forming the Wad El Kuff valley. Planting was commenced in 1926 and has been continued each rainy season, the original area having been extended meanwhile. The usual species have been employed with the addition of Celtis australis and Acacia pycnantha. Plants have been raised at a small hill side nursery on the spot. In 1931/32 45,569 plants were planted and in the last season 50,800 including Pinus halepensis, Acacia cyanophylla, Cupressus sempervirens, and a few walnuts. The development of this plantation has been remarkable, the majority of the trees having made rapid growth owing probably to the more favourable nature of the soil. Since the Forest Service started to take up land for planting in this valley, the local villagers have displayed exceptional energy in cultivating lands formerly waste.

(20) DEIR NAKHAS. (Hebron sub-district).

This area of 660 dunams is situated on a low hill where the Wad El Kuff enters the plain, and forms part of a forest reserve carrying a poor growth of scrub Quercus coccifera. Planting was commenced during last season with 84,000 plants of the usual species plus a few Pinus canariensis and Robinia pseudoacacia.

(21) KARN EL DIBEH. (Ramleh sub-district).

In 1931/32 358 dunams were planted with the following species:—

Cupressus pyramidalis	20,049
Pinus halepensis	60,000
Robinia pseudoacacia	3,100
Acacia cyanophylla	3,640
Acacia mollissima	1,500
Ailanthus glandulosa	3,215
Schinus molle	400
Cupressus macrocarpa	1,750
Pinus canariensis	250
Ceratonia siliqua	280
	94,184

In 1932/33 125 dunams were planted with 40,664 plants of the same species plus small numbers of Pinus pinea, Casuarina equisetifolia, Morus alba, and Cupressus arizonica.

(22) EL GHOSHENEH. (Ramleh sub-district).

In 1931/32 44 dunams were planted with 11, 813 plants of Cupressus horizontalis and pyramidalis, Acacia cyanophylla, and Acacia mollissima, and 223 dunams were sown with seeds of Pinus pinea.

In 1932/33 the area sown the previous year was partially resown to restock blanks where seedlings were destroyed by birds and field mice and an additional area of 107 dunams was sown with Quercus coccifera.

(23) KHIRBET RABIEH. (Ramleh sub-district).

In 1931/32 164 dunams were planted with 43.319 plants and in the succeeding year 130 dunams were planted with the same species as those described under para 21.

(24) ABU LIWEZ. (Ramleh sub-district).

Planting was commenced in 1932/33, 130 dunams being planted with 61,510 plants as follows:

Pinus halepensis	20,238
Cupressus horizontalis	25,700
Cupressus pyramidalis	5,260
Acacia cyanophylla	5,000
Cupressus arizonica	1,000
Pinus pinea	1,012
Ailanthus glandulosa	800
Cupressus macrocarpa	500
Cupressus spp.	900
Acacia mollissima	250
Eucalyptus rostrata	300
Schinus molle	200
Casuarina	100
Pinus canariensis	200
Morus alba.	

(25) GAZA SAND DUNES. (Gaza sub-district).

This area is an experimental station for the reclamation of sand-dunes. Fixation and planting has been in progress annually for several years, plants being raised at a nursery located on the dunes within 15 to 20 yards from the sea. In 1931/32, 70,000 plants were planted and in the last season 86,000, the species being Acacia cyanophylla and Eucalyptus rostrata principally besides various other varieties in smaller numbers for experimental purposes.

(26) GEBALIA SAND DUNES. (Gaza sub-district).

This area was taken up under the Sand Drift Ordinance, the intention being to secure the fixation and afforestation of this large dune area by means of compulsory village labour and the cooperation of land owners under the Ordinance. An official nursery was established to grow the necessary plants on the spot. During the two years under report approximately 100,000 plants have been planted consisting of Acacia cyanophylla and Eucalyptus rostrata mainly, and a few Cupressus macrocarpa, Cupressus arizonica and Parkinsonia aculeata.

(*b*) *Afforestation by Private Agency.*

45. Appendices 14 and 15 show the numbers and areas of privately formed plantations by sub-districts. The data were compiled by Forest Rangers in the course of enquiries on the spot. In 1931/32 93 plantations were made with an area of 1,311 dunams, and in the following year 117 plantations with an area of 1,779 dunams. There is little doubt that had the rains been abundant more planting would have been undertaken.

VIII. AMENITY PLANTING.

46. In 1931/32 103,099 plants were issued gratis, and in the following year 184,680, the distribution being shown in appendices 16 and 17.

47. The Railways Department maintains its own nursery at Lydda and has raised and distributed each year approximately 100,000 plants for decorative planting as well as for utility purposes such as checking erosion and sand-drift. The planting is done by railway employees and prizes are offered for the best results. Mr. F. W. Taylor, the District Engineer Lydda, to whose enthusiasm the railway planting schemes are primarily due, has kindly provided the following accounts of progress during the past two years.

48 Details of Railway Tree Planting 1931/32.

"During 1931, 100,000 trees and shrubs were grown in the Lydda nursery and were issued for planting along the line and in stations. The principal kinds produced were:—

Eucalyptus rostrata	50,000
Pine	1,400
Cypress	5,000
Poplar	1,000
Casuarina	10,000
Thuya	500
Oak	4,000
Acacia cyanophylla	10,000
Acacia floribunda	2,000
Acacia farnesiana	500
Pseudo-acacia	1,000
Neem	100
Persian lilac	2,000
Mulberry	3.000
Schinus molle	2,000
Schinus terebinthifolius	3,000
Poinciana regia	500
Hibiscus mutabilis	1,000
Hibiscus (red)	200
Spartium	500
Oleander	1,000
Genista	100
Jerusalem thorn	100
Lemon	800
	99,700

Every ganger in the Lydda Railway Engineering District (Haifa to El Kantara) was required to plant a number of trees, and in addition issues were made to the Assistant District Engineer, Haifa for planting on the Hejaz Railway and to the Resident Engineer of the new Haifa Workshops for planting around the perimeter of the workshops enclosure. The distribution to the various sections of the railway was:—

Palestine (both gauges)	92,000
Sinai	6,000
Trans-Jordan	2,000

In addition to the planting out of seedlings a quantity of oak was sown direct in the ground in Palestine and Acacia arabica in Sinai. In both cases the seeds are observed to be germinating though it is too early to report on the percentage.

Planting during the season was classified under three heads — utility planting, decorative work and general planting. Purely utility planting was carried out at Lydda, Yibna, Sukreir, and Isdud to check erosion of embankments and in the Wadi El Arish to form a training bank to divert the water to a bridge. A bare hillside where small landslips are frequent was planted near Deir Esh Sheikh. The enclosures in which there are large concrete reservoirs at Gaza and El Kantara were planted with acacias to prevent the erosion of the supporting mound in the first case and to prevent the blowing out of the protecting sand banks in the second case. At the new Railway Workshops on the sand dunes of the Haifa Bay Development Area a treble row of trees was planted along the boundary fence to check the drifting sand and to improve the appearance of the area.

General planting of forest trees was carried out by practically all platelaying gangs in stations where there is land at present not being used for ordinary railway purposes and in sections between stations. There are now in several sections on each side of the line rows of mixed trees several kilometres in length which in a few years will form handsome avenues.

Decorative planting of flowering trees and shrubs such as various acacias, hibiscus, spartium, poinciana, robinia, oleander and brooms was done at stations and section ganghouses. Many trees and shrubs planted within the last four years are now blossoming, and at Rehovot, Lydda, Atlit, Zickron Ya'aqow and in some of the Sinai desert stations some very fine trees can now be seen in flower.

The planting carried out by the Resident Engineer, Mr. Graham, at the new workshops is of special interest. During the past 1 1/2 years 7,500 eucalyptus and acacia cyanophylla have been planted. The soil is almost plain sand. Planting was continued through the dry summer months of 1931, about thirty trees being put in during each working day. The newly planted trees were shaded from the sun by means of three ply wood shades and were watered daily for two or three days, after which the shades were removed and watering was reduced to once each three or four days. This work has proved to be one hundred per cent successful, no trees having died. The eucalyptus first planted are now five metres high and the acacias two to three metres high.

The work done in Sinal is also of interest. Each station and ganghouse has now a considerable number of trees which are growing rapidly. Water is scarce and can only be given sparingly to newly planted seedlings, and in many cases it is very brackish. The larger trees are now thriving without watering. The results indicate that with no very great expenditure of money a great deal of the sandy coastal belt of Sinai could de afforested. Water in this area is usually found at sea level. As the height varies from O to 20 metres above this most of the hollows between dunes contain water.

The railway staff are generally interested in and helpful as regards the planting carried out. Engineering gangers after using up their allotment of trees often ask for more, and foremen and staff of other branches of the railway frequently apply for trees to plant round workshops and offices.

An inspection of the work done during the past season (1931/32) indicates that in spite of the general lack of rain and the hot dry winds experienced 75 per cent of this season's trees have succeeded".

Details of Railway Tree Planting 1932/33.

„During 1932 about 100,000 trees and shrubs of over 40 varieties were raised in the Lydda nursery. The numbers were:

Casuarina	17,000
Eucalyptus	15,000
Acacia cyanophylla	15,000
Thuya	9,000
Cypress	6,000
Mulberry	5,000
Acacia floribunda	4,000
Schinus molle	4,000
Brachychiton	3,000
Oleander (White & Pink)	2,500
Jerusalem Thorn	2,400
Pine	2,000
Persian lilac	2,000
Schinus terebinthifolius	2,000
Hibiscus mutabilis	2,000
Robinia (White & Pink)	1,000
Poplar	1,000
Lemon	500
Poinciana regia	400
Miscellaneous	5,000
TOTAL	98,800

9,000 trees and shrubs were planted in Sinai, a few were sent to Trans-Jordan, and the balance were used in Palestine.

Every ganger in the district planted a number of trees along his section. Utility planting to stop the movement of sand bank erosion and landslips was carried out at Sukerier, Barbara, Yibna, on the Jerusalem Line and around the Railway Workshops at Haifa. Several large plots of land in stations were planted with forest trees. A few flowering trees and shrubs were put in at every station and gang post, and the avenues along the line were extended.

A number of new houses were built in the district for railway staff. These were handed over for occupation complete with gardens with flowering shrubs and hedge, it being noticed that most of the employees will look after a garden which has been started although they may not be able to raise enough energy or enthusiasm to start one.

As the rainfall was low the number of trees raised in the nursery was rather more than the platelaying staff could deal with, so a number of trees (about 20,000) were given away to the R.A.F. for planting around military cantonments, to the Department of Health, to the Kadoorie School at Tulkarm and to a few other institutions.

Owing to the hot dry winds, scanty rainfall, and to depredations of animals (increased probably on account of the lack of grazing) railway planting was not so successful as usual, only 50 % of the 80,000 trees planted this season being now alive."

49. Arbor Day was celebreted with enthusiasm at Government schools and the Jewish community has held its annual festival of the "New Year of the Trees". It is also satifactory to note that the Arab section of the population is evincing greater enthusiasm in the

planting of trees for shade and ornament and that several Municipalities have devoted considerable efforts and expenditure to the improvement of town streets by the planting of trees.

IX. WORKING PLANS.

50. Despite progress in forest reservation and afforestation, systematic management of forest reserves under working plans remains practically non-existent. The position remains much the same as stated in previous reports and there is little hope of improvement until the ownership of forest reserves has been settled, the rights with which they are encumbered are determined and recorded in detail, and sufficient superior trained personnel have been appointed, capable of preparing and executing working plans. In the interim forest management on a systematic basis must necessarily depend on the untrained judgment of executive field officers of junior rank.

X. EXPLOITATION.

51. Forest reserves have been exploited almost entirely by right-holders or traders under licences for small quantities of timber, firewood, charcoal, lime, and for pasturage of village or strangers' cattle. In the absence of working plans little attention is paid to silvicultural requirements except where it has been possible to regulate felling under a coppice system of annual coupes. In the majority of cases, therefore, exploitation is not governed by considerations of "possibility" or increment and it is probable that, while some reserves are over exploited, in others less than the annual increment is removed. Similarly some reserves are over-grazed while others could support a larger number of grazing animals.

52. Statistics of production and licences are afforded in appendices 20 to 29. The number of licences issued shows little change during the two years under report, being 21,508 in 1931/32 and 21,202 in 1932/33.

53. The number of animals licensed to graze fell from 91,225 to 61,938.

54. In appendices 20 and 21 an attempt has been made to estimate the value of produce derived from forest reserves by right-holders and traders. The figures arrived at are £P.10,431 and £P. 6,263 excluding the value of grazing. Assuming that grazing is valued at as low a figure as 100 mils per head per annum, the value of grazing was £P.9,122 and £P. 6,193. If the revenue on licences be added, we get the following figures as some indication of the annual value of forest reserves:—

	1931/32	1932/33
	£P,	£P.
Estimated value of Right-holders Produce	10,431	6,263
Estimated value of Grazing	9,122	6,193
Revenue on licences (forest reserves appendices 32 and 33)	1,553	852
	£P. 21,106	£P. 13,308

As it is certain that there is a great deal of illicit felling and a considerable leakage of revenue, and low valuations have been adopted, the figures given would be considerably higher but for these factors.

55. Production from privately owned plantations of timber, firewood, charcoal and lime, was much in excess of production from forest reserves, as will be seen in appendices 20 and 21.

56. As a number of departmental plantations have reached exploitable age when they can be thinned or coppiced, provision was made in the estimates of 1931/32 for a new item entitled „Departmental Extraction of Forest Produce". Thinnings of Eucalyptus plantations at Acre and Beisan, and the coppicing of Acacia cyanophylla at Nazareth, were carried out as a charge to this vote, and the resulting produce consisting of fencing posts, tree supports, and firewood was sold or issued to Government departments.

XI. RESEARCH.

57. A report on the above subject by the Botanical and Silvicultural Assistant is attached as Annexure A. Lists of exotic species introduced and lists of seed issued are given in appendices 40 to 43, while appendix 45 reflects details of seeds and plant materials collected locally or purchased locally and abroad.

XII. SERICULTURE.

58. A report by the Sericultural Instructor is attached as Annexure B, the sericultural branch being attached to the Forest Service. Good progress has been made towards the introduction of this industry in the way of propaganda and demonstration, and the planting of mulberries. Silk cocoons of good quality have been produced by a number of schools, institutions, and individuals and there are undoubted prospects of establishing the industry, particularly if the price of silk recovers.

XIII. OLIVE PROPAGATION.

59. Olive propagation is encouraged by the issue of licences to extract wild olive suckers from forest raserves to right-holders and others, for planting in the field and subsequent grafting. Suckers are also taken from cultivated trees. Appendices 34 and 35 deal with olive propagation during the two years under report.

60. During the last season it was decided to take special measures to assist villages where there are no forest reserves containing wild olives. A special credit of £P. 240 was opened for this purpose. 45,360 suckers were extracted from the Mughair Forest Reserve by contractors employed departmentally and transported by motor-lorry to different parts of the country, mainly for free issue to cultivators. The final distribution was as follows:

Issued gratis to cultivators in the sub-district of Jerusalem, Ramallah, Jaffa, Ramleh, Gaza, Beersheba, Tiberias, and Beisan.	27,646
Planted at Government stations for budding and subsequent issue gratis or at nominal rates	15,604
Sold	2,110
TOTAL	45,360

XIV. FINANCIAL STATEMENT.

61. Appendices 30 to 33 show details of forest revenue for the two years under report according to forest ranges and categories of produce. There was a decrease in the total from £P. 6.228 to £P. 5,418 or £P. 810. This reduction might be due in part to the mildness of the last winter and the diminished demand for firewood and charcoal. In the writers opinion forest revenue ought to be steadily increasing from year to year, whereas the contrary is the case, the figures being:—

	£P.
1928	8,224
1929	6,801
1930	7,090
1931/32	6,228
1932/33	5,418

62. From the lst April 1931 the issue of forest licences was taken out of the hands of Forest Rangers and handed over to District Officers in consequence of the recommendations of the O'Donnell Commission. District Officers were empowered by regulations under the Forests Ordinance to remit licence fees in cases of poverty, and owing to the general shortage of pasturage grazing fees on strangers' cattle in forest reserves were halved during the winter period.

63. It is noteworthy that the larger proportion of the revenue is derived from licence fees on the sale of produce from privately owned plantations, and privately owned natural woods, although the total area of private forest is very much smaller than the total area of forest reserves.

64. Certain items of revenue which might reasonably be credited to forest revenue are credited to other departments. Among these are:—

Animal Tax.
Game Licences.
Revenue on quarries in forest reserves.
Lease of land in forest reserves.
Fines for Forest Offences.

65. Expenditure is shown in appendices 46 and 47. In 1931/32 the item afforestation was increased under Special Warrant by £P.800 to provide for the purchase of plants from private nurseries. In the following year the afforestation vote was increased from £P. 3,000 to £P. 4,000. Item Silvicultural Research was reduced by £P. 100 but a new post was created for the Silvicultural Assistant whose salary was formerly paid against the item. A classified post was also created for the Head Gardener of Government House Grounds. The Grant-in-Aid of Sericultural Experimental Work was increased by £P.200. A new item was introduced for the extraction and free issue of olive suckers from forest reserves, the amount voted being £P. 240,

XV. ADMINISTRATION.

66. The staff of the Forest Service was as under:—

1 Deputy Director of Agriculture and Forests (Chief Forest Officer)	Pensionable.	Professionally trained.
1 Senior Forest Officr.	Pensionable	Professionally trained.
2 Forest Surveyors.	Temporary Classified Junior Division)	Professionally trained.

10 Forest Rangers.	Temporary (Classified Junior Division)	No special training.
1 Botanical & Silvicultural Assistant.	Temporary (Classified Junior Division)	Partially trained.
22 Mounted Forest Guards	Temporary (Unclassified)	Untrained.
18 Unmounted Forest Guards	Temporary (Unclassified)	Untrained.
10 Forest Gardeners.	Temporary (Unclassified)	Sufficiently trained.
1 Head Gardener Govt. House.	Temporary (Classified Junior Division)	Trained.
3 Gardeners Govt. House.	Temporary (Unclassified)	Sufficiently trained.

Mr. Tear Deputy Director of Agriculture and Forests and Chief Forest Officer combined the duties of Acting Director of Agriculture and Forest and Chief Forest Officer for the following periods:

1931	25th	August	to	31st	December
1932	1st	January	to	31st	May
"	14th	September	to	31st	December
1933	1st	January	to	16th	April.

XVI. MISCELLANEOUS.

67. Mr. Amihud Grasovsky, Senior Forest Officer, attended the International Congress of Forest Research held in France during July, 1932, as an official delegate of the Government of Palestine.

68. The „Men of the Trees in Palestine" a voluntary association founded in 1929 in liaison with the official forest service, to promote tree planting has made satisfactory progress and should be capable of expanding into an important movement. It has collected approximately £P. 1,000 and enrolled 320 members. The Association has done useful work in connection with small plantations, road-side planting, a school tree planting competition, a number of amenity planting schemes, and lectures.

69. Appendix 37 shows details of imports and exports of timber and forest produce. The figures show the extent to which Palestine is dependent on imports and the large increase in imports which has taken place since 1922.

70. Owing to the extensive increase in citrus cultivation the demand for fruit cases has risen and is likely to rise to some 20 million cases during the next decade. The demand is met entirely from imports chiefly from Roumania and Russia. Formerly ready cut shooks were used but in recent years planks have been imported and cut up into case timber by a number of local factories. In order to study future requirements and the possibility of local production of timber as well as the incidence of customs tariffs Government set up a committee of official and unofficial members entitled the Citrus Timber Committee to examine the whole question.

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(CHIEF FOREST OFFICER)

REPORT OF THE
BOTANICAL AND SYLVICULTURAL ASSISTANT
for the years 1931/32 and 1932/33.

I. BOTANICAL INVESTIGATIONS.

Two-hundred-and-ninety specimens have been added to the herbarium which now comprises one-thousand-nine-hundred-and-seventy-nine plants. Most of these were collected by Forest Rangers; others were received from correspondents for the purpose of identification; and several were collected by the Sylvicultural Assistant on occasional tours undertaken in connection with other duties. Among the plants identified during these tours the following should be noted:

(*a*) *Quercus aegilops.* This species appears to be more common than was commonly supposed before. A study of its distribution has been undertaken and steps taken to ensure its preservation by limiting felling licences and to promote its propagation by sowing and planting in view of its value for timber and tannin.

(*b*) *Nymphaea alba* found in the swamps near Hedera where it is gradually disappearing as the reclamation of the swamps progresses. A number of rhizomes were extracted and distributed for ornamental planting in garden pools.

A number of plants growing in the Jerusalem Forest Arboretum, of which the labels were lost, have been identified. Among these Eucalyptus cladocalyx was especially noted for its thrifty appearance and apparent resistance to drought.

The herbarium has been entirely rearranged and is now properly housed in permanent cupboards. It contains at present one-thousand-nine-hundred-seventy-nine sheets, representing nine-hundred-and five species of ninety-one families. These include Centuria I and II of the Flora Palestinae Exsiccata presented by the Hebrew University.

One-hundred-and-fifty-one doubtful specimens have been referred to the Royal Botanic Gardens, Kew, for identification, the Service being much indebted to that institution in this regard.

The compilation of an alphabetical catalogue of the herbarium has been undertaken.

In addition to the herbarium a carpological collection was started. It contains at present about five-hundred specimens of small seed and twenty-five cones and other large seed.

The botanical work has been frequently concerned with answering questions of correspondents, visitors and forestry staff regarding the economic products of plants and their indentification. Among these were plants suspected of being poisonous, received from the Health Department, and foreign seeds received from the Department of Customs.

II. NURSERY INVESTIGATIONS.

The nursery attached to the Headquarter offices at Jerusalem has been utilised not only for ordinary propagation, but also for experimental study of technical nursery problems and the propagation of exotic species.

(*a*) *Seeds and Seedling Culture.* Experiments were conducted to determine the practicability of subjecting hard-shelled seed to special treatment in order to accelerate germination. Seven species of seed were each subjected to six different treatments. The most complete investigation was made on carob seeds. The average results have shown that the highest percentage of germination occurred in carob seed treated with boiling water whereas the most rapid germination, though lower in percentage, was obtained by an half hour treatment with Commercial sulphuric acid. Soaking in cold water and in water heated to 60°C gave nearly the same results as no treatment.

As a general practice, seeds employed in large quantities at nurseries or those of special interest were subjected to replicate germination tests in the laboratory in order to determine their cultural value.

A total of sixty-one tests with twelve species was carried out during the period under review. These were combined with purity tests and seed-countings and the results taken as basis for the calculation of the number of seedlings to be expected from a given weight unit of seed for each species, and the optimum quantity of seed to be sown per unit of area.

A preliminary study of the damping-off disease was carried out with eleven species as follows:—

Pinus halepensis
Pinus leucodermis
" palustris
" laricio
Cedrus libani
" deodara

Pinus sylvestris
Pinus banksiana
" rigida
Cassia alata
Cupresus sempervirens.

The time of sowing appears to be one of the main factors governing the development of the fungus. Native species were more seriously attacked when sown too late in the spring, while exotics suffered when sown too late in autumn.

Preventive treatment with sulphuric acid and copper sulphate was undertaken experimentally but the results are not conclusive as yet.

(*b*) *Transplants.* The scarcity and high cost of water at the Jerusalem and other forest nurseries raised the problem of the most economic use of water for nursery stock. The experiments undertaken were designed to show the relation between frequency and amount of watering to survival and growth of Pinus halepensis transplants in nursery beds. A block of forty-five nursery beds containing a total of ten thousand plants was devoted to the study.

For all plants the cultural operations were indentical except watering which was carried out according to a schedule laid down at the beginning of the experiments, viz.

(a) four beds watered once in two months
(b) " " " " every month
(c) " " " " every fortnight
(d) twenty-eight beds watered at different intervals varying from 4 to 30 days, according to weather conditions, moisture content of the soil and appearance of the plants.

The results of observations on the growth and survival were recorded every month during the whole season. The most striking differences were in the total number of plants and the proportion of first grade plants produced. c) and d) gave the best results but while the total amount of water used for a given quantity of plants of both groups was almost equal, the quality of stock produced by (d) was much superior to that of c). Unless further investigations prove the contrary, it was thus concluded that for the case of Pinus halepensis twelve waterings during the growing season (six months) are sufficient provided that the intervals vary in accordance with the conditions of environment and state of the plants. The total quantity of water required for satisfactory growth of one thousand Pinus halepenis transplants in the Jerusalem area during the whole summer (6 months) appears to be from $1\,^1/_2$ to 2 m^3.

(*c*) *Soils and Fertilizers.* Experimental planting of Pinus halepensis seedlings was undertaken in ordinary soil mixed with various proportions of sewage soil, in order to ascertain the value of this material as a fertilizer. — The results were negative, presumably because of the acid reaction of the sewage soil.

With the kind assistance of the Chilian Nitrate firm fertilizer experiments were undertaken with nitrate, superphosphate and organic manure applied to a block of fifteen nursery beds with Pinus halepensis transplants. The highest increment in stem length was observed in the beds fertilized with superphosphate.

(*d*) *Mulching and Weeding.* Trials with different materials proved that saw-dust is the most convenient and economic mulch for transplants in pots, tins and other receptacles; and that the use of saw-dust makes it possible to double the intervals between consecutive watering.

For seed beds pure sand gave the best results. For open ground transplant-beds mulching experiments were undertaken with "Halna" paper. The material is a kind of black fabric obtainable in rolls which are placed between the rows or drills in which plants are growing. Ten beds with Pinus halepensis transplants were designed for the purpose. The strips of paper were placed at different dates in order to obtain some data with regard to the most appropriate time of the season on which the soil should be covered. The results were disappointing as there was no marked difference in the growth of the plants in check-beds and covered beds. The only economy realised was a reduction in the frequency of weeding and hoeing as the paper prevented growth of weeds; however, this economy was counterbalanced by the cost of the paper.

(*e*) *Receptacles.* For evergreen species which are refractory to planting without earth-balls experiments were undertaken with the purpose of finding a receptacle for propagation possessing both essential qualities together, viz. (a) minimum initial cost including cost of raising, transport and planting of stock, and (b) maximum survival and development in the nursery and in field. Trials for comparison of the value of four types of receptacles were conducted during the summer 1932 with two-thousand-four-hundred and-eighty-nine plants of six species. The plants of each species were divided into four groups using for every group a different kind of receptacle, viz. (a) half petrol tins, (b) earthen flower pots, (c) "Navatis" pots, i.e. rectangulaf collapsible pots without bottom made of black fabric paper, (d) godets "Navatis", i.e. pots of the same material made in the form of flower pots.

The highest percentage of survival at the nursery was recorded for (c) and the largest increment of stem length for half tins. Field results could not be recorded as yet. The black fabric pots were partly deteriorated by the moisture and could not retain the earth during transport. It was therefore decided to repeat the trials by placing the paper pots in half-tin containers to ensure their conservation.

Occasional trials were made with Queensland Planting tubes (narrow zinc tubes 15 cms long by 4 cms wide without bottom). Two-hundred and seventy plants of eight species were transplanted in these receptacles, with satisfactory results.

(*f*) ***Diseases, Pests and Casualties.*** Adverse atmospheric factors caused considerable losses of nursery plants during the period under review. Heat and drought, added to the impossibility of sufficient watering, caused loss of several plants during both summers 1931 aud 1932.

In February, 1932, the temperature fell to a minimum of-2.7° and several plants were killed by frost. The greatest damage was caused to seedlings transplanted a few days before the frost. The frozen top layer of the soil swelled and lifted up the seedlings causing disturbance of the root system and strangulation or freezing of the plant collar. More established plants suffered less and recovered soon after the soil was firmed down and watered. No considerable damage was noted from the snow which covered the whole nursery during a few days in early February of the same year. It was observed that damage from frost was greater to seedlings in petrol tins than to seedlings in nursery beds.

Seedlings of Acacia cyanophylla, Laurus nobilis and Pittosporum were attacked by "Icerya Purchasi".

Acacia lophantha plants were damaged by "Aphis". The pests were controlled with appropriate insecticides.

Juglans regia seedlings in open ground beds were attacked by moles; use of traps for control gave satisfactory results.

Complete defoliation as a result of intense insolation occurred in Juglans regia, Castanea vesca and Morus alba transplants. Most of these recovered after the first rains.

III. SYLVICULTURAL INVESTIGATIONS.

(*a*) ***Naked-rooted Planting of Evergreens.*** Planting of naked-rooted conifers and broadleaved evergreens was increased to a considerable extent. For Pinus halepensis and Acacia cyanophylla the results achieved tend to prove that naked rooted plants can be used with success given correct methods of propagation, lifting, packing and final setting out in field, and selection of suitable weather. Owing to the very unfavourable weather conditions which prevailed during the two years, the percentage of survival could not be considered as entirely conclusive for the calculation of the economical side of the problem.

(*b*) ***Fertilizers.*** Experiments with nitrate and surphosphate were undertaken at Government House plantation on two spots: one containing three plots with seven-hundred one-year old Pinus halepensis plants and another containing four rows with seventy-three four-year old plants of the same species.

At Bab el Wad plantation an application of fifty grammes Chilean nitrate per tree for Pinus halepensis and Cupressus sempervirens gave a stem increment of 330% for the former and 50% for the second species as compared with 200% and 30% of the check plots.

(*c*) ***Artificial regeneràtion.*** Besides direct sowing of the Pinus pinea and Quercus aegilops seeds which is being carried out yearly on an increasing scale, regeneration by broadcast sowing was tried with seeds of Acacia cyanophylla, Acacia farnesiana and Ailanthus glandulosa. Of these, the two former were subjected to a treatment with boiling water before sowing. Owing to the exceptionally low rainfall during the period under review, most of the seeds failed to germinate.

(*d*) ***Experimental Plantations.*** The work had for its main purpose to solve the two following problems: (a) methods and species suitable for afforestation of arid localities, (b) species suitable for the most economic utilisation of swampy places.

I. ARID LOCALITIES.

Khan el Ahmar. The plot was replanted with eight-thousand-seven-hundred and eleven plants of nineteen species in 1931/32 and ten-thousand-and-sixty six plants of twenty-one species in 1932/33. The extreme drought which prevailed during the last three years had a disastrous effect upon the remnants of the previous plantings. The yearly total of precipitation during this period did not exceed 50 mms. The conditions served as an excellent criterion for the degree of drought resistance of different species. Some species of Eucalyptus have been especially noted for their very thrifty appearance; this is true in a lesser degree for Acacia cyanophylla, Parkinsonia aculeata, Myoporum montanum, Cupressus arizonica and Balanites aegyptiaca. The last planting was especially concerned with the trial of newly introduced Eucalyptus species, and some Leguminosae.

Some alterations were introduced in the technique of planting and soil treatment in order to study the methods best adapted for the optimum utilization of precipitation moisture. Holes were opened about two months before planting and refilled with loose soil for conservation of moisture; ditches along the contours were dug to catch water on sloping land. Eucalyptus and Acacia species were pruned experimentally in order to show to what degree this may be able to check evaporation.

Khan el Abyad. This is a new experimental plantation consisting of two different plots situated on the Jerusalem — Jericho road, planted in order to ascertain whether drought resistant plants can be established in this locality of low rainfall. The bulk of the plantation consists of Pinus halepensis mixed in equal proportion with Acacia cyanophylla among which are interpolated seven other species reputed to be drought resistant as follows:—

Ailanthus glandulosa
Cupressus arizonica
Eucalyptus leucoxylon
Prosopis juliflora
Prunus amygdalus
Ceratonia siliqua
Robinia pseudo-acacia

The present state of the plantation is promising.

A few species including Prosopis juliflora (the American mesquite-tree) are being tried in the arid regions of Gaza and Tiberias.

2. SWAMPS.

A special plot was designed for experimental planting in the swamps of Kakoun. 12 species of Eucalyptus and Conifers were planted during the last year; of the latter the most promising appears to be Taxodium mucronatum (American Bald Cypress).

Dalbergia sissoo is being tried in the wet portions of Wady Gaza.

(e) Arboreta. An important activity during the 2 years was the formation of a large collection of plants in large receptacles which were kept for permanent exhibition and study at the headquarter's nursery.

At the beginnings of the year 1931 the collection consisted of some 605 plants representing about 300 species properly labelled and classified. In October 1931 the best specimens were put at the disposition of the "Men of the Trees" association for a public show held at the Jerusalem Citadel. This formed a group representing 250 species of ornamental and economic trees, shrubs and sub-shrubs. Each specimen was provided with a label containing a short description of the plant, with notes as to its value and cultivation.

A group of 52 conifer species was left at the Citadel for permanent exhibit and the remaining plants used for amenity planting at the Government House and for the formation of a new arboretum in the grounds.

Formation of a new collection was then started which consisted at the end of the last season of 432 plants representing 250 species.

Several of these have since been distributed to Government House Grounds, Nazereth Residency Grounds, and Tulkarm Agricultural School.

The arboretum at the Jerusalem Horticultural Station contains at present 180 species of trees and shrubs. These are measured every year in spring and the dates are recorded.

All labels were renewed during the last year and unnamed plants re-identified.

The Tulkarm School Arboretum is situated on heavy clay soil with insufficient drainage and this was taken into consideration when fixing the choice of plants. 156 trees were planted in 1931 including Taxodium mucronatum, Quercus suber (Cork oak) and 11 species of Eucalyptus. At the end of the season some failures were noted and in the winter of 1932/33, 29 new species were replanted.

IV. PLANT INTRODUCTION.

The material introduced consisted of:

(a) plants of industrial and economical value: timber trees, tannin producing plants, fodder plants, etc.

(b) plants reputed adaptable to peculiar soil and climate conditions, viz. arid localities swamps, sand dunes, etc.

(c) plants of ornamental value.

The most noteworthy species introduced were: Caesalpinia spinosa — a valuable tannin producing plant from Royal Botanic Gardens Kew: Prososis juliflora — an extremely drought resistant fodder-tree from Egypt: Taxodium mucronatum — a valuable timber tree for swampy soils from North America. The plants were propagated mainly from seed which was obtained from various sources. Where sufficient seed was available it was treated in different ways. All records on the various stages of growth have been maintained separately for each species on special proformae. These are kept in separate files arranged alphabetically for easy reference. 509 parcels of seeds, cuttings and rhizomes were received by exchange and 40 obtained by purchase from well known foreign firms. Of the Exchange correspondents during the year 1931/32 the most prominent were the John Innes Institution England which presented 44 seed parcels and the U.S.S.R. Government, which presented 27 parcels; during 1932/33 the U.S.A. Government kindly presented 78 seed samples.

V. EXCHANGE BUREAU.

Seeds were issued in exchange to foreign correspondents and on several occasions free to local applicants as a means of encouraging propagation and tree planting. During the period under review 207 parcels of seeds were sent abroad and 136 distributed locally.

The stock consisted mainly of surplus seed of common arborescent species, the collection of which was primarily intended for the requirements of government nurseries. Collection of herbaceous species took place occasionally, when special requests had to be met.

An alphabetical list of seeds available for Exchange or free issue, containing a total of 98 items was prepared; a card-index containing tally-cards for each species was prepared; making it possible to ascertain at a glance the balance of stock available for each item.

VI. NURSERIES.

Steps were undertaken to organise the control of plant production in all nurseries by fixing yearly a general scheme of sowing and by centralizing the distribution of propagation material from headquarters.

A total of 355 seed parcels were issued to the nurseries. Of these the Jerusalem headquarters nurseries received 258, this being the only place where such a quantity of species could be grown under close supervision and without confusion. In the other nurseries production was limited to a small number of forest species most commonly employed for afforestation.

Arrangements were made to regulate the output of nursery stock and render possible its control at headquarters. The main points realised were as follows:

A general planting scheme was prepared early in the season and the amount and variety of plants required calculated. The surplus of stock was then set aside for amenity planting, free distribution and sale.

Record sheets for each species arranged alphabetically and according to the nurseries were maintained at the headquarters, which made it possible to know the balance of stock for each item at any moment.

The free distribution of plants was organised in such a manner that no issues could be made at any nursery without being checked at headquarters.

VII. FOREST PRODUCTS.

(*a*) ***Tanning materials.*** Investigations were conducted on the technical and commercial possibilities of the acorn cups of Quercus aegilops as a tanning agent. Several trees were identified and samples of acorns collected in various districts. These were referred to the Imperial Institute for analysis and statement of industrial value. It appears that the tanning content varies with the locality. Steps have, therefore, been undertaken to localise the best productive trees in view of selection and propagation of the species. A rough survey of the distribution of the trees in the country, its habitat and an estimate of the possible production was undertaken.

(*b*) ***Pasture and grazing investigation.*** The Kakoun swamps (near Tulkarm) on which fertilizer and grazing experiments have been conducted for some years were investigated. A botanical analysis of each of the 24 experimental plots was made by means of quadrats and charts. The investigation was designed to show whether the pasture, a large proportion of which is overgrown with weeds can be transformed into improved grassland by cultural and manurial treatment. The typical sward consists of some 60% grasses (Hordeum maritimum, Bromus brachystachis, Hordeum bulbosum and Oryzopisis coerulescens being characteristic) only 1 % legumes (Melilotus sulcata and Infolium fragiferum) and about 39 % of weeds, such as Scirpus maritimus, Crysanthemum sp., Oenanthe prolifera etc. The value of the previous treatments could not be stated exactly as there were no data available regarding the original composition. It was, however, noted that the grazed plots which received no fertilizers are richer in valuable components than those which were fertilized and cut for hay every year.

Samples of plants growing on the sand dunes were received from District Officer, Haifa, collected near Hedera; these were identified and information regarding their pasture value supplied.

Seeds of eight species of fodder plants were received from Australia; these included four species of grassess, three of drought resistant brows-shrubs and one fodder tree. Experimental sowing was carried out at the Jerusalem headquarters nursery, at the Bab el Wad plantation and at Jericho Horticultural Station. The seeds are germinating at present.

At the Khan el Ahmar plantation a block of four plots was designed for experiments on pasture improvement. Each plot was subjected to a different cultural treatment, viz: 1) ploughing, 2) ploughing and manuring, 3) sowing with lucerne, 4) no treatment (check).

There are little prospects for the success of this operation owing to the extreme drought of the season.

As a first step to the study of the pasture flora and grazing possibilities in Palestine, a list of wild fodder plants is being prepared.

(*c*) *Honey plants*. The first stage in the study of the local nectariferous flora consisted in the preparation of a preliminary list of honey plants growing in Palestfne. The list contains besides the enumeration of the species and their time of flowering quantitative data regarding their productiveness.

(*d*) *Industrial plants*. A list of plants yielding essential oils, growing wild or cultivated in Palestine was prepared.

VIII. FOREST MUSEUM

Several items were added to the collection during the last years. Among these are: —

(i) a set of dried and framed native plants classified according to their economical value, viz. medicinal, industrial, parasites, weeds, sand-dune-plants;

(ii) a set of the commonest world timbers presented by the Imperial Forestry Institute, Oxford;

(iii) specimens of furniture boards finely worked and polished prepared from local wood and presented by a local factory.

(iv) some large logs of locally grown timber;

(v) to the collection demonstrating the utilization of local forest products were added baskets made of Arundo donax, and Vitex agnus castus.

A systematic collection of technical forest photographs has been organised. An index catalogue was compiled and the photographs arranged in three different albums according to the subjects. The total number of photographs available at present amounts to some 560. Some of these have been enlarged and are exhibited in the offices of the Forest Service.

In the spring of 1932 an exhibit demonstrating the activities of the Forest Service during the past ten years was arranged in the Government Pavilion of the Levant Fair which took place at Tel-Aviv. Photographs, maps and diagrams were exhibited, showing progress of afforestation, forest protection and demarcation, reclamation of sand dunes and plant production at Government nurseries.

A few items of the museum collection were issued on loan for the Anglo-Palestine Exhibition in London.

IX. LIBRARY

The forest library contains at present 94 books, 395 bulletins and leaflets and 554 miscellaneous papers including reports, catalogues, etc. Nine monthly periodicals are being received. The alphabetical card index was continued and all information of technical interest duly classified for easy reference.

A catalogue was compiled and regularly kept up-to-date.

X. EDUCATIONAL.

On several occasions information was issued to the public with regard to methods of plant propagation and cultivation. The headquarters forest nursery was visited by groups of school children to whom explanations on planting and sowing were given. Demonstrations on propagation of forest trees were carried out at the Bishop Gobat's School. The pupils of the same school visited the Bab el Wad plantation under the guidance of an officer of the Forest Service.

A draft for an illustrated popular leaflet on the cultivation of the carob tree in Palestine has been prepared during the last months of 1932/33.

A short descriptive list of ornamental shrubs and small trees recommended for planting in Palestine has been compiled. The list contains summary descriptions of native and introduced plants and is intended for public information.

M. Schwartzman.

BOTANICAL AND SYLVICULTURAL ASSISTANT

ANNEXURE B.

REPORT OF THE SERICULTURAL INSTRUCTOR FOR THE YEARS 1931/32 AND 1932/33.

1. Financial Provision for the Sericultural Service was increased on the 1932/33 — estimates from LP. 450 to LP. 650, consisting of LP. 350 for the salary of the Sericultural Instructor, and LP. 300 for the propagation of mulberry plants at Government nurseries, and purchase of sericultural materials and laboratory equipment.

2. During the two years under report, 41,734 mulberry plants were planted by private persons and at mulberry demonstration plots on Government land.

3. The sericultural service issued the following quantities of breeding equipment to private individuals in order to encourage their interest in sericulture. —

No.	Article	No.	Article
166	Trays	110	Test Tubes
78	Poles	34	Cocoon Boxes
14	Shelves	100	Perforated Boxes
5	Ladders	3	Boxes for Collections
16	Incubators	400	Technical Photos
4	Lamps	200	Brown Paper for Trays
13	Bottles for Silkworms	1671	Perforated Paper for Cleaning

4. As the sericultural service only commenced its activities in 1928 and the first mulberry plants were distributed from Government nurseries at the beginning of 1929, the quantity of leaves available for feeding silk worms was restricted.

5. Different experiments have been made with chemical fertilizers which promote the development of mulberry foliage. These experiments are of interest because attempts are being made to establish the mulberry in hilly areas where the soil is comparatively poor. It is in these localities that other forms of cultivation give a very limited and insignificant income.

6. The collection of mulberry leaves for breeding silk worms is done in two ways:—

(a) The leaves are defoliated on the spot, or

(b) Green branches covered with leaves are cut and transported to the breeding chamber where they are defoliated.

In either case the trees produce new leafy shoots.

The second crop of leaves furnishes a green fodder much appreciated by domestic animals. Mulberry trees can thus be exploited twice:

(a) in the spring for silk worms, and

(b) in the summer and autumn for feeding animals.

But in order to produce this double effect, it is necessary to incorporate in the soil necessary fertilizers to maintain the vigour of the trees. In 1932 an experiment was started with a thousand mulberry trees whose leaves are to be utilised exclusively for feeding animals.

7. Other experiments aiming at the maximum production of leaves were started in 1932. — The young mulberry trees are pruned in such a way annually as to give a definite form to the crown. After the third pruning the trees have twelve principal branches.

It will be seen that annual pruning favours the development of the foliage and that the trees not pruned produce a small quantity of leaves and much wood. This experiment confirms trials made by the writer in Palestine in 1923/28.

8. If mulberry trees are cultivated in a rational manner they can be made to furnish considerable quantities of leaves as early as the third year from planting.

A large number of mulberries distributed by the sericultural service have given satisfactory results.

9. With the object of planting hilly localities and exploiting poor soils as well as fixed sand dunes, the sericultural service has planted 15,475 mulberries by way of demonstration in the following places: —

(a)	Ard-el-Jardun	plantation, near	Tiberias	975
(b)	Aqaba	" "	Nazareth	3000
(c)	Sand Dunes	" "	Acre	3000
(d)	Sand Dunes	" "	Gaza	2805
(e)	Balad-es-Sheikh	" "	Haifa	3000
(f)	Madad	" "	Tiberias	1000
(g)	Kadoorie Agricultural School,		Tulkarm	700
(h)	Stud Farm	" "	Acre	1000

10. Departmental plantations established in 1929 at the Acre Stud Farm have developed extremely well and the leaves produced by the young trees have been utilised already for feeding silk worms on a small scale.

At Acre a workman was employed by the Service to breed silk worms in accordance with modern methods and up to date equipment as a demonstration to people in the locality.

Worms were bred at different periods as follows: —

(a)	worms hatched on	8.4.32
(b)	" "	18.4.32
(c)	" "	23.4.32
(d)	" "	1.5.32

Owing to the small quantity of leaves available, only ten kilos of cocoons were produced.

In order to complete the demonstration on practical lines the sericultural service constructed a rearing hut of eucalyptus poles and branches. Mukhtars and other cultivators from the district were enabled to see rearing in progress and the production of cocoons, and the advantages of modern equipment as compared with primitive methods.

11. At the plantation on the Acre Stud Farm in order to show the best utilisation of the soil, mulberry trees were interplanted with beetroots. Where irrigation is possible and a catch crop can be grown, mulberry trees derive considerable benefit from the extra cultivation of the soil.

12. A second demonstration of rearing of silk worms was carried out at the Kadoorie Agricultural School in Tulkarm. The objective was to teach sericulture to thirty-eight students aud 15 village school-masters. Here, too, worms of different ages were bred in order that the pupils and school masters could follow the development of the silk worms from the hatching period to the formation of the cocoons. Practical lessons were followed up by theoretical courses on the cultivation of the mulberry and the breeding of silk worms.

13. Although the pupils and village school masters had never bred silk worms before, they were able to obtain during the course of this demonstration sixteen kilos of cocoons. This result was obtained through the use of modern breeding materials. The cultivation of the mulberry trees and the pruning of the trees were carried out by the pupils themselves with the result that the plantation, which is relatively young, has made an excellent development.

14. In 1931 the Department of Education arranged for Fuad Eff. Malhas to carry out the inspection of sericultural work at Government schools and in 1932 a second instructor, Jamil Eff. Jaouny, was also appointed to assist in the same work.

15. The number of silk worms bred at Government schools naturally depended on the quantity of leaves available and on the installation of breeding materials. Altogether sericulture was introduced at thirteen schools as follows:

1. Acre Boys' School
2. Beisan " "
3. Beit Jalla Boys' School
4. Jenin " "
5. Jericho " "
6. Nablus Hashemiya Boys' School
7. Nazareth Elementary Boys' School
8. Rameh " "
9. Ramleh " "
10. Sarafand el Khareb " "
11. Tiberias Boys' School
12. Jamoun Boys' School
13. Allawiya Girls' School Jerusalem

Breeding was carried out at these schools to enable the pupils to be taught the elements of sericulture. At seven of them breeding was carried out on proper lines, with the result that fair quantities of cocoons were produced, and the sericultural service awarded prizes amounting to £P 8 by way of encouragement.

16. Silk worm breeding was also carried out at Jewish schools with the object of introducing sericulture among Jewish scholars. Some schools were favoured by the fact that old mulberry trees existed in the neighbourhood from which the schools were able to obtain large quantities of leaves for feeding the silk worms.

Jewish schools at which silk worm breeding was carried out are as follows :

1. Ben Shemen—Children's village
2. Beit Sefer Amami, Haifa
3. Beit Sefer Reali, Haifa
4. Biological Institute, Tel Aviv.
5. Gymnasia, Tel Aviv.
6. Beit Sefer Amami, Hedera.
7. " " Herzlia.
8. " " Kfar Tabor.
9. Agricultural School, Mikveh Israel.
10. Beit Sefer Amami, Nahalal.
11. " " Nahliel.
12. " " Ness-Ziona.
13. „ „ Neveh Shaanan.
14. „ " Rehoboth.
15. " " Rishon-le-Zion.
16. " " Sedjera.
17. Meyer Shfeya Children's Village.
18. Villensky's School, Tel Aviv.
19. Tel Nordau School, Tel Aviv.

Prizes amounting to £P. 2 were granted to Jewish schools which produced the best cocoons.

17. A certain number of families have taken up silk worm breeding as well as a forest guard belonging to the official forest service. The question of granting loans for sericulture has not yet been studied by Government, but it is certain that if loans could be granted many families among the agricultural community would take up sericulture as a supplementary means of increasing their annual income.

18. In 1931 the reeling of cocoons was continued at the Government Girls School "Aeshiya" at Nablus where sixty-seven pupils of twelve to sixteen years of age were taught how to reel cocoons. The thread obtained was of much better quality than that of previous years.

19. The Department of Agriculture and Forests published and circulated a leaflet in the three official languages entitled "The Mulberry Silk Worm".

J. DE LEON
SERICULTURAL INSTRUCTOR

ANNEXURE C.

LIST OF APPENDICES 1931-32 AND 1932-33.

1. Forest Legislation 1931-32 and 1932-33.
2. Forest Reserves gazetted during the period 1925-26 to 1932-33.
3. Demarcation and Survey of Forest Reserves and Forests proposed for reservation 1931-32.
4. Demarcation and Survey of Forest Reserves and Forests proposed for reservation 1932-33—Northern Circle.
4a. Demarcation and Survey of Forest Reserves and Forests proposed for reservation 1932-33—Southern Circle.
5. Survey of Departmental Forest Plantations 1931-32.
6. Survey of Departmental Forest Plantations 1932-33.
7. Schedule of Surveys, etc. undertaken by Forest Surveyors for other Services 1931-32.
8. List of Fences around Departmental Plantations during 1.4.31—31.3.33.
9. Huts, Cisterns and Roads built in Departmental Plantations during 1.4.31—31.3.33.
10. List of Government Forest Nurseries 1931-32.
11. List of Government Forest Nurseries 1932-33.
12. Stock at Government Forest Nurseries at 1st October, 1931.
13. Stock at Government Forest Nurseries at 1st October, 1932.
14. Private Forest Plantations formed during 1931-32 and 1932-33.
15. Schedule of Private Forest Plantations at 31st March, 1933.
16. Plants issued and sold from Government Forest Nurseries 1931-32.
17. Plants issued and Sold from Government Forest Nurseries 1932-33.
18. Distribution of Plants purchased from the Jewish Labour Girls' Farms 1932-33.
19. Analysis of Expenditure at Forest Nurseries during 1932-33.
20. Statement of Total Forest Production 1931-32.
21. Statement of total Forest Production 1932-33.
22. Forest Produce extracted under Trade Licences from Forest Reserves and Private Forests for Trade Purposes 1931-32.
23. Forest Produce extracted under Trade Licences from Forest Reserves and Private Forests for Trade Purposes 1932-33.
24. Forest Produce extracted from Forest Reserves under Rightholders' Licences for Domestic and Agricultural Purposes 1931-32.
25. Forest Produce extracted from Forest Reserves under Rightholders' Licences for Domestic and Agricultural Purposes 1932-33.
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27. Animals licensed to graze in Forest Reserves 1932-33.
28. Forest Licences issued 1931-32.
29. Forest Licences issued 1932-33.
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31. Forest Revenue by Forest Ranges 1932-33.
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34. Olive Propagation 1931-32.
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36. Balance of Trade in Forest Products 1931-32
37. Balance of Trade in Forest Products 1932-33
38. Forest Offences 1931-32
39. Forest Offences 1932-33
40. List of Exotics introduced 1931-32
41. List of Exotics introduced 1932-33
42. List of Seeds issued from Exchange Bureau 1931-32
43. List of Seeds issued from Exchange Bureau 1932-33
44. Forest Fires 1931-32 and 1932-33
45. List of Plant Material collected or purchased locally or purchased abroad 1931-33
46. Statement of Expenditure — Forest Service 1931-32
47. Statement of Expenditure — Forest Service 1932-33

APPENDIX I.

FOREST LEGISLATION.

1931/32.

Uunder the Forests Ordinance 1926.	Notice, Regulation, Proclamation, etc:	Official Gazette	
		No.	Date
Proclaiming Forest Reserves Nos. 203 and 204	Proclamation	270	1.11.30
Corrigendum to the proclamation of Forest Reserve No. 202	Corrigendum	270	1.11.30
Proclaiming Forest Reserve No. 205	Proclamation	297	16.12.31
Corrigendum to the proclamation of Forest Reserve No. 205	Corrigendum	299	16. 1.32
Declaring a part of Forest Reserve Balad Esh Sheikh No. 194 a "Closed Forest Area"	Declaration	301	16. 2.32
1932/33.			
Proclaiming Forest Reserve No. 206	Proclamation	310	1. 7.32
Regulation under Section 26(1) regarding the granting of Licences	Regulation	310	1. 7.32
Regulation under Section 26 regarding Remission of Licence Fees	Regulation	312	1. 8.32
Proclaiming Forest Reserves Nos. 207 to 214	Proclamation	313	16. 8.32
Regulation under Section 26 regarding Licence Fees on grazing of cattle in Forest Reserves	Regulation	320	6.10.32
Proclaiming Forest Reserve No. 215	Proclamation	329	1.12.32
Declaring Forest Reserve No. 79 a "Closed Forest Area"	Declaration	347	2. 3.33
Proclaiming Forest Reserves Nos. 216 to 220	Proclamation	348	9. 3.33

APPENDIX 2.

FOREST RESERVES GAZETTED DURING THE PERIOD 1925/26 to 1932/1933

District and Sub-District	1925/26		1926/27		1927/1928		1928/29		1929/30		1930/32		1932/33		Total at 31st. March 1933.	
	No. of Reserves	Approx. Area in dunams	No. of Reserves	Approx. Area in dunams	No. of Reserves	Approx. Area in dunams	No. of Reserves	Approx. Area in dunams	No. of Reserves	Approx. Area in Dunams	No. of Reserves	Approx. Area in dunams	No. of Reserves	Approx. Area in dunams	No. of Reserves	Approx. Area of dunams
NORTHERN DISTRICT.																
Haifa	16	46,390	13	25,796	2	853	2	19,221	—	—	2	1,437	2	1,367	37	95,064
Acre	9	74,769	—	—	—	—	3	2,041	—	—	1	1,094	—	—	13	77,904
Nazareth	6	16,528	23	63,800	—	—	—	—	—	—	—	—	2	918	31	81,246
Tiberias	6	11,626	5	3,600	1	1,000	—	—	3	750	—	—	—	—	15	16,976
Nablus	9	81,805	—	—	—	—	—	—	—	—	—	—	—	—	9	81,805
Jenin	23	229,000	—	—	—	—	—	—	—	—	—	—	—	—	23	229,000
Tulkarm	1	5,000	—	—	2	2,065	—	—	—	—	—	—	3	2,073	6	9,138
Safad	3	2,800	—	—	—	—	—	—	—	—	—	—	—	—	3	2,800
Total N.D.	73	467,918	41	93,196	5	3,918	5	21,262	3	750	3	2,531	7	4,358	137	593,933
SOUTHERN DISTRICT																
Jerusalem	6	6,050	1	800	1	2,000	—	—	1	534	—	—	—	—	9	9,384
Bethlehem	1	400	—	—	—	—	—	—	—	—	—	—	—	—	1	400
Ramallah	3	1,300	—	—	—	—	—	—	—	—	—	—	—	—	3	1,300
Jericho	1	3,500	—	—	—	—	—	—	—	—	—	—	—	—	1	3,500
Ramleh	14	10,800	—	—	1	1,000	—	—	—	—	—	—	—	—	15	11,800
Hebron	22	27,320	2	700	20	6,050	—	—	—	—	—	—	8	2,890	52	36,960
Gaza	—	—	2	32,058	—	—	—	—	—	—	—	—	—	—	2	32,058
Total S.D.	47	49,370	5	33,558	22	9,050	—	—	1	534	—	—	8	2,890	83	95,402
GRAND TOTAL:	120	517,288	46	126,754	27	12,968	5	21,262	4	1,284	3	2,531	15	7,248	220	689,335

APPENDIX 3.

DEMARCATION AND SURVEY OF FOREST RESERVES AND FORESTS PROPOSED FOR RESERVATION 1931/32.

Name of forest	No. of Forests	Area of Forest	Area of cultivated plots	Area of plantations	Total Area	No. of cultivated plots	No. of departmental plantations	Length of external boundaries in metres.	No. of boundary marks	Serial No. of Reserve	Observations.
		in metric dunams									
Araqa	2	2500	500	—	3000	5	—	10000	40	27	Surveyed
Yabad, Bartaa and Zibda	11	37250	4367	—	41617	21	—	195000	600	21	do
Ard Abu Zeida	1	18	—	—	18	—	—	700	4	207	Sketched
Umm Ammud	1	79	—	—	79	—	—	1200	5	208	do
Jebel Maasara	1	200	—	—	200	—	—	2700	17	209	do
Sheikh Barrak	1	544	16	—	560	2	—	7500	26	210	do
Sheikh Abdallah	2	62	—	—	62	—	—	1400	9	211	do
Sheikh Salman	1	346	—	—	346	—	—	5000	22	212	do
Jebel Khallet Oudeh	1	19	—	—	19	—	—	800	8	213	do
Jebel Abu Rheim	1	1647	10	—	1657	2	—	19200	83	214	do
Khirbet el Kurn	1	603	40	—	643	3	—	4000	38	88	Surveyed
Rba' el Abyad	1	1094	—	—	1094	—	—	5500	19	205	do
Bir en Natif	1	3496	245	—	3741	14	—	40000	125		Surveyed prior to reservation
Daliyat el Karmil	12	8954	524	126	9604	21	1	120000	645	9	Resurveyed
Ras el Ali										98	do
El Jennadieh										99	do
Wad en Nahl										100	do
Jalama	1	7578	305	476	8356	21	2	61000	260	8	do
Shash el Qada	1	386	—	—	386	—	—	3500	22	154	do
Nakar Seif el-Din	1	648	5	—	653	1	—	5000	38	156	do
Umm Qasab	1	1348	52	—	1400	6	—	9000	84	158	do
Ein el Beida	1	872	176	6	1009	5	1	6000	45	155	do
Ein Rabiyeh	1									157	do
Jebel el Qafze	1	602	—	—	602	—	—	3500	10	215	Surveyed
Jebel el Mshaqqah	1	2598	39	—	2637	3	—	12000	33		Surveyed prior to reservation
TOTAL:	45	.70799	6279	608	77686	104	4	513000	2133		

APPENDIX 4.

DEMARATION AND SURVEY OF FOREST RESERVES AND FORESTS PROPOSED FOR RESERVATION 1932-1933.

NORTHERN CIRCLE.

No.	Name of Forest	No. of Forests	Area of Forest	Area of cultivated plots	Are of plant-ation	Total Area	No. of cultivated plots	No. of depart-mental plant-ations	Length of external bound-aries in metres	No. of boundary marks	No. of Reserve	Observations
		In metric dunams										
1	Jabal Aqaby	1	—	—	316	316	—	1	2800	12	215	Demarcated and surveyed
2	Ras Amer West	1	—	—	93	93	—	1	1200	6	216	do
3	Ras Amer East	1	228	—	—	228	—	—	4100	26	217	do
4	El Mudahdara	1	1748	4	—	1752	1	—	14500	51	218	do
5	Jeba North	1	1049	—	—	1049	—	—	8700	57	219	do
6	Jeba South	1	318	—	—	318	—	—	3100	18	220	do
7	Summaqa	1	1678	45	—	1723	3	—	14400	70	—	Demarcated and surveyed prior to reservation
8	Mughara A	1	4750	137	—	4887	5	—	22000	112	12	Demarcated and Surveyed
9	Mughara B	1	1662	174	—	1836	5	—	18500	75	13	do
10	Wad Nahl	2	4597	95	—	4692	2	—	31000	108	14	do
11	Hinu	3	706	—	—	706	—	—	10000	42	15	do
12	Matabin	1	2210	50	—	2260	3	—	17000	75	16	do
13	Abu Mudawer	1	150	—	—	150	—	—	2500	15	17	do
14	Shanna	1	875	10	—	885	1	—	5000	23	18	do
15	Waara	1	184	—	—	184	—	—	5000	33	20	do
16	Manara	1	152	—	—	152	—	—	1900	8	—	Demarcated and surveyed prior to reservation
17	Rba Abu Hamde	1	433	—	—	433	—	—	3400	17	—	do
18	Nukarat Hamde	1	236	—	—	236	—	—	3000	12	159	Demarcated and Surveyed
19	Nukarat Es Salmanie	1	353	—	—	353	—	—	2900	8	160	do
20	El Farsh	1	2010	—	—	2010	—	—	9000	32	161	do
21	Okdeh Hannane	1	115	—	—	115	—	—	2100	10	162	do
22	Nukara Abu Kanatir	1	117	—	—	117	—	—	1800	11	163	do
23	Arnin	1	76	—	—	76	—	—	1400	8	164	do
24	El Luhof	1	393	—	—	393	—	—	3300	18	—	Demarcated and surveyed prior to reservation
25	El Khudeira	1	94	—	—	94	—	—	2000	13	—	do
26	Um el Hetari	1	139	—	—	139	—	—	1500	7	—	do
27	El Ghazale	1	27	—	—	27	—	—	850	5	—	do
28	Khallet Hamad	1	111	—	—	111	—	—	1600	10	—	do
29	El Ghabe	1	167	—	—	167	—	—	1850	11	—	do
30	Saqab	1	260	—	—	260	—	—	2300	10	—	do
31	Abu Mudawwar	1	612	—	—	612	—	—	7200	29	—	do
32	Et Tawil	1	1293	3	—	1296	—	—	9500	40	—	do
33	Er Ruweikat	1	337	—	—	337	—	—	3500	17	—	do
34	Wad El Karak	1	74	—	—	74	—	—	1200	6	—	Redemarcated and surveyed prior to reservation
35	Esb Shabane	11	1606	1625	—	3231	15	—	20500	91	—	do
36	Akasan and Khirbet Maqsur	2	340	—	—	340	—	—	3800	15	—	Redemarcated and surveyed
	TOTAL	50	29100	2143	409	31652	36	2	244400	1101		

APPENDIX 4 a.

DEMARCATION AND SURVEY OF FOREST RESERVES AND FORESTS PROPOSED FOR RESERVATION 1932/33.

SOUTHERN CIRCLE:

Name of Forest	No. of Forests	Area of Forest	Area of cultivated Plots	Area of Plantation	Total Area	No. of Cultivated Plots	No. of Departmental Plantations	Length of External Boundaries in metres	No. of Boundary Marks	No. of Reserve	Observations
		In metric dunams									
El Harayeik	1	268	—	—	268	—	—	3,000	15	59	Demarcated and Surveyed
Kurnet Umm Fash	1	416	—	—	416	—	—	5,000	32	60	do
Jebel Muntar	1	1,767	—	—	1,767	—	—	8,400	31	62	do
Kharabet Ethuraya	1	3,777	—	—	3,777	—	—	5,000	24	63	do
Jabal Abu Mazin	1	339	—	—	339	—	—	4,200	8	69	do
Jabal Abu Lviz	1	286	—	280	566	—	1	4,200	29	79	do
Dhar Jrash	1	2,164	—	—	2,164	—	—	7,000	23	80	do
Quarn Abu Shafi	1	924	—	—	924	—	—	4,000	8	81	do
Shaab El Zuhleiqa	1	622	—	—	622	—	—	4,000	16	82	do
Batn Muheshin and Dahar Abu Mehaya	2	221	—	—	221	—	—	2,800	21	83	do
Jebel Alali El Benat	2	498	—	—	498	—	—	8,000	22	87	do
Beit Susin	2	600	—	—	600	—	—	8,000	42	189	do
En Nukkar	1	847	—	—	847	—	—	4,500	7	—	Demarcated and Surveyed prior to reservation
Dhahr Et Tannur	1	736	28	—	764	1	—	4,700	27	—	do
Salit Et Tannur	1	221	—	—	221	—	—	2,200	8	—	do
Jebel Dahr Luwizan	1	346	—	—	316	—	—	3,000	17	70	Demarcated and Sketched
Kharbet El Gozolan	2	1,352	—	—	1,352	—	—	9,000	44	72	do
Jebel Wad El Halabia El Jennubia	2	537	—	—	537	—	—	4,400	23	75	do
Jebel El Sardi	3	2,923	10	—	2,933	1	—	22,000	54	76	do
Dahr Shaab Jamali	2	469	—	—	469	—	—	4,400	12	77	do
Shaab Souedeh	2	1,081	2	—	1,083	1	—	10,700	34	78	do
Jebel Shuweike	1	500	—	—	500	—	—	5,000	11	111	do
Jebel Dahr El Selhi & Irk Badran	1	924	16	—	940	—	—	6,500	19	112	do
Jebel Kanieh	4	1,977	37	—	2,014	3	—	21,000	71	114	do
Jebal Umm El Loz	5	1,155	—	—	1,155	—	—	14,000	40	115	do
Khurab Ibn Zeidd (Rabain)	1	267	—	—	267	—	—	2,600	8	116	do
Jebel Shaab El Wardeh	1	1,666	—	—	1,666	—	—	16,000	39	117	do
Jebal El Balad	1	617	3	—	620	1	—	6,000	24	118	do
Daher Okbur	2	501	—	—	501	—	—	5,700	21	119	do
Jebal Atraba	8	1,046	9	—	1,055	2	—	15,100	63	120	do
Jebel Khallet Shatara	1	200	—	—	200	—	—	2,800	9	181	do
Jebal El Saghira	1	300	—	—	300	—	—	3,100	8	182	do
Jebel Khallet Safie	1	277	7	—	284	2	—	3,100	21	183	do
Jebel Kabbarah	1	313	—	—	313	—	—	3,400	14	184	do
Jebel Khal'et Tanineh	1	762	13	—	775	3	—	7,700	46	185	do
Jebel El Rasem El Kabir	3	387	—	—	387	—	—	6,100	27	186	do
Jebel Khallet Ismail	2	145	—	515	660	—	1	8,100	43	187	do
TOTAL	64	31,431	125	795	32,351	14	2	254,700	961		

APPENDIX 5.

SURVEY OF DEPARTMENTAL FOREST PLANTATIONS 1931/32.

Name of Plantation	Area in metric dunams	No. of planted plots	Length of boundaries in metres	Observations
Acre Sand Dunes	273	12	3000	Coastal plantation in Reserve No. 2
Acre Arboretum	3.6	1	250	In the Acre Agricultural Station
Baisan	64	3	1600	Afforested Area in the Agricultural Station, Baisan
Madad North	33	1	900	In Reserve No. 199
Madad South	19	2	800	" " " 200
Tiberias South	281	5	4200	" " " 190
Ard El Jardon	105	3	2200	" " " 201
Bir El Emir	85	1	1300	Afforested State Domain
Nazareth Residency Ground	86	10	4000	Afforested State Domain
Ailut	223	8	6000	In Reserve No. 132
Sertaba	267	4	3000	" " " 95
Esfia	439	4	5000	" " " 8
Ain Rabiyeh	6	1	300	" " " 157
Dalieh	126	5	2000	" " " 9
Balad Esh Sheikh	73	1	1400	" " " 194
Basset Kakun	69	2	4000	" " " 188
Um Safa	402	6	3000	" " " 55
Safhat Wad Ali	647	4	8600	" " " 167
Jebel Harsis	256	1	2200	" " " 202
Khirbet Rabieh	224	4	3600	" " " 58
Karn El Dibeh	523	4	7500	" " " 61
El Ghosheine	1255	12	15000	" " " 64
Kaiserin Augusta Victoria Stiftung (Ex Government House)	23.5	1	1200	
Government House	90	3	1200	Afforested State Domain
Wad el Kuff	449	9	5000	In Reserves Nos. 152 and 153
Vale of Sorek	24	2	1700	Afforested Rail Station Ground
Ashdod	180	2	2000	Afforested sands to protect rail line
Gaza Sand Dunes	828	6	8500	Afforested sands in Reserve No. 121
Gebalia Sand Dunes	488	4	6500	Afforested sands under reclamation
Rafa	10	10	1000	Afforested State Domain
TOTAL	7552.1	131	106950	

APPENDIX 6.

SURVEY OF DEPARTMENTAL FOREST PLANTATIONS 1932/33.

No	Name of Plantation	area in metric dunams	No of planted plots	Length of boundaries in metres	Observations
	NORTHERN DISTRICT				
1	Balad Esh Sheikh	424	4	3800	In Reserve No. 194
2	Jelameh	149	4	4000	" " " 8
3	Dalieh	25	1	1400	" " " 9
4	Acre Sand Dunes	150	19	—	" " " 2
5	Manshieh	2	1	300	" " " 1
6	Nazareth Residence Grounds	47	6	1600	Afforested State Domain
7	Ailut (Baharan)	393	6	5700	In Reserve No. 132
8	Sertaba	120	2	2200	" " " 95
9	Jabal Aqaby	316	1	2800	" " " 215
10	Safad Castle	30	2	1300	Afforested State Domain
11	Madad North	99	1	1400	In Reserve No. 199
12	Madad South	48	1	1000	" " " 200
13	Tiberias South	203	2	2700	" " " 190
14	Ard el Jardon	51	2	1300	" " " 201
15	Stud Farm Acre	93	1	1300	Area Reserved for afforestation
16	Khan el Hod	7	2	500	Experimental Plantations
	SOUTHERN DISTRICT				
17	Jebel Harsis	269	1	3000	In Reserve No. 202
18	Jebel Abu Simri	49	1	1000	" " " 151
19	Safhat Wad Ali	170	6	3500	" " " 167
20	Jebel Kubrah	245	3	2700	" " " 153
21	Shaab el Ain	45	2	900	" " " 152
22	Kurnet Ain el Kawabish	81	2	1800	" " " 55
23	Karn el Dibeh	575	3	5700	" " " 61
24	Khirbet Rabieh	159	6	2400	" " " 58
25	El Ghosheine	385	4	5800	" " " 64
26	Gaza Sand Dunes	595	3	5260	Afforested Sand Dunes in Reserve No. 121
27	Gabalia Sand Dunes	151	4	4800	Afforested Sand Dunes under Reclamation.
28	Deir Nakhas	515	1	3400	In Reserve No. 137
29	Abu Liwez	280	1	3400	" " " 79.
	TOTAL	5676	92	74960	

APPENDIX 7.

SCHEDULE OF SURVEYS, ETC. UNDERTAKEN BY FOREST SURVEYORS FOR OTHER SERVICES 1931/1933.

Name of Area	Nature of Work	Area in Dunams	No. of Plots	No. of Days Spent	Service Concerned
Acre Stud Farm	Survey of Tob Alti land	2,382	14	11 days by both surveyors	Acre Stud Farm
Tulkarm Agricultural School	Drawing Cropping Map			4 " by one "	Arab Kadoorie Agricultural School
Palestine Communications Map	Drawing Quarantine Line			1 " by " "	Entomological Service
Map of Forest Area in Palestine	Drawing Map for Census			2 " by both "	Census
Acre Stud Farm	Survey of an area for the extension of the Acre Stud Farm	975	13	4 " field work by one surveyor 2 " office work by one surveyor	Acre Stud Farm
Jerusalem Horticultural Nursery	Laying out of the boundaries of a new plot for the extension of the Jerusalem Horticultural Nursery	6	1	2 " by one surveyor	Horticultural Service
Acre Stud Farm	Survey of 1931/32 crops	2,300	70	4 " field work and 8 " office work by one surveyor	Acre Stud Farm
" " "	2 copies of Tob Alti land			2 " by one surveyor	Veterinary Service
Total		5,663	98		

APPENDIX 8.

LIST OF FENCES AROUND DEPARTMENTAL PLANTATIONS MADE DURING 1.4.1931/31.3.1933

Name and Situation of Plantation.	Area of Plantation in metric duuams	Length of Boundaries of the Plantation	Length of Fence erected in metres	Amount spent on the Fencing £P. Mils	Cost of Fencing per metre Mils	Cost of fencing per dunam £P. Mils	Observations
Bir El Emir, Nazareth	84.3	1233	921	55.053	60	0.877	The part of the boundary (312 metres not fenced is surrounded with an old drystone fence. Fencing work was carried out by hired daily labour under the supervision of Forest Ranger Nazareth, in October, 1931.
Safad Castle, Safad	30.5	780	780	63.100	82	2.069	Fencing work carried out by hired daily labour under the supervision of the Forest Ranger Safad in March, 1932.
Wad El Kuff, Hebron Sub-District	—	—	642	48.870	76	—	The Fence is a line alongside the Hebron-Beit Jibrin Road. Fencing work carried out by a contractor under the supervision of the Forest Ranger Jerusalem in March, 1932.
Jabal Aqaby, Nazareth	316	2730	2730	156.920	57	0.496	Fencing work carried out by hired daily labour under the supervision of the Forest Ranger Nazareth in December, 1932.
Deir Nakhas, Hebron Sub-District	515	3400	806	46.332	57	—	The western bondary of the plantation running along a field road has been fenced. Work carried out by hired labour under the supervision of the Forest Ranger Jerusalem in December, 1932.
Ras Amer West, Tulkarm Sub-District	93	1200	344	17.183	50	—	The western and southern boundaries of the plantation along the Tulkarem-Jaffa road and a field road have been fenced. Work carried out by hired labour with the collaboration of Forest Ghaffir and Forest Guard under the supervision of Forest Ranger Tulkarm in December 1932.
Khan El' Hod	6	505	505	34.141	73	6.190	Two separate plots fenced. Work carried out by hired labour under the supervision of the Forest Ranger Jerusalem in November, 1932
Haifa Acre Road Amenity Planting Acre Sub-District	1.6	816	816	14.100	17	8.937	Two plots fenced, using Eucalyptus posts extracted from the Departmental Menshiye plantation. Work carried out by hired daily labour under the supervision of Forest Ranger Acre in February, 1933.
Basset Kakoun, Tulkarm	—	—	150	2.161	15	—	Eucalyptus posts extracted from departmental plantations have been used. Work carried out by Forest Ghaffir and Forest Guard under the supervision of Forest Ranger Tulkarem in January, 1933.
		Total:	7694	440.860			

HUTS, CISTERNS AND ROADS BUILT IN DEPARTMENTAL PLANTATIONS DURING 1.4.1931/31.3.1933.

Name of Plantation	HUTS			CISTERNS			ROADS and TRACKS		Observations
	No.	Measurements in metres	Expenses £P. Mils	No.	Capacity	Expenses £P. Mils	Length in metres	Expenses £P. Mils	
Balad esh Shikh	1	3x4	17.000	1	16m^3	9.000	2000	1.000	Most work required for the road and cistern was done by the Ghaffir. Only for such work as could not be performed by him, skilled daily labour was empolyed.
Ard el Jardon	1	4x4	20.000						
Madad South	1	4x4	15.000						
Jabal Aqaby	1	4x4	22.500				380		Road made by the Forest Ghafir
Baharan	1	3x3	15.000						
Sertaba	1	3x3	15.000						
Ras Amer West	1	4x4	22.735	1	80m^3		200		An old cistern repaired and cleaned by the Forest Ghaffir. Road also made by the Ghaffir. An old cistern repaired and cleaned.
Deir Nakhas	1	4x4	34.157	1	80m^3	11.559	500	7.340	
Bab al Wad				1	80m^3	5.845	600	8.300	ditto.
Wad el Kuff	1		8.250				500	7.010	An old hut repaired.
Um Safa	1		4.360				300	2.300	ditto.
Abu Liwez							300	—	Road made by Forest Ghaffir.
Karn el Dibe							500	—	ditto.
Total:	10		174.002	4	256m^3	26.404	5280	25.950	

APPENDIX 10

LIST OF GOVERNMENT FOREST NURSERIES 1931/32

SOUTHERN CIRCLE.	
Jerusalem (Headquarters)	Temporary Nursery
Bab El Wad,	Flying Nursery.
Wad El Kuff	Flying Nursery.
Um Safa	Flying Nursery.
Khirbet Rabieh	Flying Nursery.
Gaza	Sand Dune Nursery.
Gebalia	Sand Dune Nursery.
NOTHERN CIRCLE.	
Tiberias	Temporary Nursery
Maddad	Flying Nursery.
Acre	Sand Dune Nursery.
Nazareth	Temporary Nurseay.
Nablus	Temporary Nursery.

APPENDIX 11

LIST OF GOVERNMENT FOREST NURSERIES 1932/33

SOUTHERN DISTRICT.	
Jerusalem (Headquarters)	Temporary Nursery.
Bab El Wad	Flying Nursery.
Wad El Kuff	Flying Nursery.
Um Safa	Flying Nursery.
Khirbet Rabieh	Flying Nursery.
Gaza	Sand Dune Nursery.
Gebalia	Sand Dune Nursery.
NOTHFRN DISTRICT.	
Tiberias	Temporary Nursery.
Maddad	Flying Nursery.
Acre	Sand Dune Nursery.
Nazareth	Temporary Nursery.
Nablus	Temporary Nursery.
Kakoun	Flying Nursery.

APPENDIX 12

STOCK AT GOVERNMENT FOREST NURSERIES AT 1st OCTOBER 1931.

Nursery	Sub-District	No. of Plants
SAND DUNES NURSERIES		
Gaza	Gaza	122393
Gebalia	Gaza	85045
Acre	Acre	51649
		259087
TEMPORARY NURSERIES.		
Jerusalem (Headquarters)	Jerusalem	52429
Tiberias	Tiberias	52100
Nazareth	Nazareth	66807
Nablus	Nablus	42900
		214236
FLYING NURSERIES.		
Bab El Wad	Ramleh	139058
Wad El Kuff	Hebron	109153
Um Safa	Ramallah	30028
Rhirbet Rabieh	Ramleh	160903
Maddad	Tiberias	45000
		484142
	GRAND TOTAL:	957465

APPENDIX 13

STOCK AT GOVERNMENT FOREST NURSERIES AT IST OCTOBER. 1932

Nursery	Sub- c	No. of Plants
SAND DUNES NURSERIES,		
Gaza	Gaza	106259
Gebalia	Gaza	50985
Acre	Acre	52299
		209543
TEMPORARY NURSERIES,		
Jerusalem (Headquarters)	Jerusalem	66095
Tiberias	Tiberias	105100
Nazareth	Nazareth	132112
Nablus	Nablus	30630
		333937
FLYING NURSERIES		
Bab El Wad	Ramleh	156118
Wad El Kuff	Hebron	125755
Um Safa	Ramallah	15570
Khirbet Rabieh	Ramleh	148236
Maddad	Tiberias	1000
Kakoun	Tulkarm	30105
		485784
	GRAND TOTAL:	1029264

APPENDIX 14

PRIVATE FOREST PLANTATIONS FORMED DURING 1931/32 AND 1932/33.

Sub-District	1931/1932		1932/33		Total	
	Number of Plantations	Area in Dunams	Number of Plantations	Area in Dunams	Number of Plantations	Area in Dunams
Jerusalem	1	2	1	2	2	4
Jaffa	10	77	13	68	23	145
Gaza	5	35	4	18	9	53
Haifa	10	289	8	325	18	614
Acre	7	18	8	26	15	44
Nazareth	20	227	23	570	43	797
Safad	3	22	19	128	22	150
Nablus	—	—	—	—	—	—
Jenin	—	—	3	11	3	11
Zicron	23	494	10	194	33	688
Tulkarm	7	113	9	150	16	263
Tiberias	—	—	8	138	8	138
Baisan	7	34	11	149	18	183
Total:	93	1311	117	1779	210	3090

APPENDIX No. 15.

SCHEDULE OF PRIVATE FOREST PLANTATIONS AS AT 31st MARCH, 1933.

Sub-District	Number of Plantations	Area in Dunams
Jerusalem	12	540
Jaffa	286	10340
Gaza	15	616
Haifa	37	2064
Acre	21	176
Nazareth	87	4538
Safad	66	695
Nablus	1	3
Jenin	7	233
Zicron	103	6187
Tulkarm	36	928
Tiberias	35	890
Baisan	39	1102
Total:	745	28,312

PLANTS ISSUED AND SOLD FROM GOVERNMENT FOREST NURSERIES 1931/32

Nursery	GRATIS ISSUES									Issues to Departmental Plantations	Sales from Government Nurseries	Value	GRAND TOTAL
	Govt. owned lands, properties, gardens etc. (Excluding Dept. Plantations).	Government and non-Government Schools.	Villages and settlements for road and avenue planting	Municipalities for road and avenue planting	Individual land owners, for roadside planting	Orphanages	Permanent Military Cantonments	Gratis Issues General	TOTAL		No.	LP. Mils	
Jerusalem (Headquarters)	9,325	1,717	411	1,000	3,115	350	1,143	3,939	21,000	446	320	2.490	21,766
Bab El Wad	452	220	1,438	—	6	300	—	—	2,416	126,181	—	—	128,597
Wad El Kuff	1,010	1,820	700	2,090	56	180	—	5,500	11,356	91,899	—	—	103,255
Um Safa	—	143	—	—	50	—	—	—	193	23,781	—	—	23,974
Khirbet Rabieh	3,375	2,195	—	—	1,600	—	1,300	—	8,470	149,317	—	—	157,787
Gaza	7,355	200	—	1,612	7,020	—	11,105	—	27,292	87,964	600	3.000	115,856
Gebalia	—	1,030	—	1,688	—	—	—	—	2,718	82,370	200	1.000	85,288
Tiberias	50	1,240	2,155	180	—	500	650	—	4,775	37,500	24	0.120	42,299
Maddad	—	—	—	—	—	—	—	—	—	36,500	—	—	36,500
Acre Sand Dunes	—	1,705	—	—	160	—	—	—	1,865	53,544	60	0.600	55,469
Nazareth	—	625	3,980	—	2,450	500	—	804	8,359	50,761	—	—	59,120
Nablus	10,220	3,785	—	—	—	—	650	—	14,655	3,855	8,000	20.000	26,510
TOTAL:	31,787	14,680	8,684	6,570	14,457	1,830	14,848	10243	103,099	744,118	9,204	27,310	856,421

PLANTS ISSUED AND SOLD FROM GOVERNMENT FOREST NURSERIES 1932/33

Nursery	GRATIS ISSUES									Issues to Departmental Plantations	Sales from Government Nurseries	GRAND TOTAL
	Govt. owned lands, properties, gardens, etc. (Excluding Deptl. Plantations)	Government and non-Government Schools	Villages and settlements for road and avenue planting	Municipalities for road and avenue planling	Individual land owners, for roadside planting	Orphanages	Permanent Military Cantonments	General	TOTAL			
Jerusalem	1,467	38,971	7,522	2,000	11,085	116	5,529	5,330	72,020	8,224	227	80,471
Bab El Wad	205	—	100	—	2,000	—	—	1,000	3,305	149,400	—	152,705
Wad El Kuff	1,596	985	3,000	1,000	480	—	—	—	7,061	115,800	—	122,861
Um Rafa	—	—	—	—	—	—	—	—	—	15,420	—	15,420
Khirbet Rabieh	2,500	5,560	167	250	—	2,537	280	—	11,294	125,500	—	136,794
Gaza	2,550	2,862	3,750	2,150	1,584	—	120	—	13,016	83,365	2,076	98,457
Gebalia	—	—	—	1,050	—	—	242	—	1,292	41,945	—	43,237
Tiberias	5,500	1,062	460	750	—	3,730	350	—	11,852	120,600	100	132,552
Madad	—	1,801	—	—	—	—	—	—	1,801	8,250	—	10,051
Acre Sand Dunes	1,950	1,520	2,730	—	1,950	280	195	—	8,625	36,725	—	45,350
Nazareth	2,200	1,242	10,556	4,000	8,850	—	848	10,669	38,365	66,300	—	104,665
Nablus	—	2,309	1,000	—	12,600	—	140	—	16,049	3,200	—	19,249
Total:	17,968	56,312	29,285	11,200	38,549	6,663	7,704	16,999	184,680	774,729	2,403	961,812

DISTRIBUTION OF PLANTS PURCHASED FROM THE JEWISH LABOUR GIRLS' FARMS DURING 1932/33

Nursery	Situation	Kind of Plants	No of Plants	Destination	
				Free Distribution	Government Plantation
Girls Farm	Jerusalem	Acacia cyanophylla	66,365	6,165	60,200
" "	"	Pinus halepensis	8,390	4,590	3,800
Meshek Hapoaloth	Nakhlat Yehuda	Acacia cyanophylla	2,814	—	2,814
" "	" "	Pinus halepensis	5,000	2,000	3,000
" "	" "	Eucalyptus rostrata	1,500	—	1,500
Hacarmel	Tel-Aviv	Acacia cyanophylla	14,400	1,000	13,400
"	" "	Eucalyptus rostrata	12,995	2,310	10,685
"	" "	Pinus halepensis	7,174	1,956	5,218
Girls Farm	Shehunath Borohov	Cupressus pyramidalis	1,500	—	1,500
" "	" "	Pinus halepensis	2,700	—	2,700
" "	" "	Acacia cyanophylla	860	—	860
Hatsafon	Tel-Aviv	Acacia cyanophylla	16,600	—	16,600
"	" "	Eucalyptus rostrata	10,353	—	10,353
"	" "	Pinus halepensis	12,000	—	12,000
Khavorath Hapoaloth	Petah Tikvah	Pinus halepensis	8,120	—	8,120
" "	" "	Acacia cyanophplla	5,200	—	5,200
" "	" "	Eucalyptus rostrata	13,800	13,800	—
" "	" "	Cupressus pyramidalis	1,000	1,000	—
Girls Farm	" "	Eucalyptus rostrata	1,500	—	1,500
" "	" "	Pinus halepensis	8,650	—	8,650
" "	" "	Acacia cyanophylla	2,100	—	2,100
" "	Affuleh	Pinus halepensis	28,000	—	28,000
" "	Ain Haron	Pinus halepensis	27,000	—	27,000
		Total:	258,021	32,821	225,200

APPENDIX NO. 19

ANALYSIS OF EXPENDITURE AT FOREST NURSERIES DURING 1932/33 PLANTING SEASON.

Nursery	Gardeners charged to Personal Emoluments LP. Mils	Labour LP. Mils	Purchase of Tins and Pots LP. Mils	Transport LP. Mils	Water Supply LP. Mils	Manure and Soil LP. Mils	Repairs of Tools LP. Mils	Cost of Trees or Plants purchased LP. Mils	Miscellaneous LP. Mils	Lifting and Packing LP. Mils	General Repairs of Nursery LP. Mils	Grand Total LP. Mils	No. of Plants at Nursery LP. Mils	Rate per 1,000 Plants LP. Mils
Bab El Wad	72,000	46,110	5,125	0,400	—	—	—	—	—	—	—	123.635	156,118	0,791
Wad El Kuff	72,000	40,420	2,200	1.450	—	—	0,800	0,100	0,200	—	0.640	117,810	125,755	0:813
Um Safa	—	8.700	—	—	—	1.620	—	—	1,200	—	—	11,520	15,570	0,793
Tiberias	72,000	73,875	5,000	0,950	19.420	—	0,200	–	11,677	—	—	183,122	105,100	1.742
Acre Sand Dunes	—	66,700	6.477	1,060	—	—	—	—	3,670	0.500	—	78,407	52,299	1,499
Nazareth	138,000	88,455	8,857	2,320	18,760	1,980	3,565	1,800	1,910	—	4,160	269,807	139,112	2,042
Gaza and Gebalia	72,000	85,350	—	4,600	—	7,000	—	—	—	—	—	168,950	157,244	1.073
Khirbet Rabieh	72,000	42.750	—	1,650	1.200	—	—	—	—	—	—	117.600	148,236	0.793
Jerusalem	216.000	89,215	5,037	12.113	43.635	7,750	5.210	0.070	0,425	0.450	14,465	394,370	66,095	5,966
Total :	714.000	541.575	32.696	24,543	83,015	18.350	9,775	1.970	19.082	0.950	19,265	1465,221	958,529	1,528

APPENDIX NO, 20.

STATEMENT OF TOTAL FOREST PRODUCTION 1931/32

	Timber Pieces	Firewood Kantars	Charcoal Kantars	Lime Kantars	Olive Sukkers and Saplings Number
Extracted from Forest Reserves by Rightholders	10677	11830	316	529	52340
Extracted from Forest Reserves for Trade Purposes,	7305	3198	3568	2855	5965
Total:	17982	15028	3884	3384	58305
Extracted from Private Forest Lands	77836	27353	8392	80547	–
GRAND TOTAL:	95818	42381	12276	83931	58305

ESTIMATED VALUE OF FOREST PRODNCE EXTRACTED FROM FOREST RESESVES.

	Timber		Firewood		Charcoal		Lime		Olive	Suckers	Value
	Pieces	Value LP. Mils	Kantars	Value LP. Mils	Kantars	Value LP. Mils	Kactars	Value LP. Mils	Number	Value LP. Nils	Grand Total LP. Mils
Produce extracted by Rightholders	10677	160,155	11830	3549.000	316	3798,800	529	132,250	52340	130,850	4352,055
Produce extracted by Traders	7305	109.575	3198	9594.000	3568	4281,600	2855	713,750	5965	14,912	6079.237
Total :	17982	269,730	15028	4508.400	3884	4660,800	3384	846.000	58305	145,762	10431,292

Note: Timber estimated value at 15 mils pcr piece
Charcoal " " at 1200 " " kantar (300 kgs)
Lime " " at 250 " " " (300 kgs)

Firewood estimated value at 300 mils per kantar (300 kilogrms.)
Olive suckers " " at $2^1/_2$ " " sucker

STATEMENT OF TOTAL FOREST PRODUCTION 1932/33.

	Timber Pieces	Firewood Kantars	Charcoal Kantars	Lime Kantars	Olive Suckers and Saplings Number
Extracted from Forest Reserves by Rightholders	22,504	7,127	541	2,372	6,260
Extracted from Forest Reserves for Trade Purposes	5,210	1,909	1,268	1,365	6,571
Total	27,714	9,036	1,809	3,737	12,831
Extracted from Private Forest Land	77,516	25,705	10,323	64,322	900
GRAND TOTAL	105,230	34,741	12,132	68,059	13,731

ESTIMATED VALUE OF FOREST PRODUCE EXTRACTED FROM FOREST RESERVES.

	Timber		Firewood		Charcoal		Lime		Olive Suckers		Grand Total
	Pieces	Value LP. Mils	Kantars	Value LP. Mils	Kantars	Value LP. Mils	Kantars	Value LP. Mils	Nunber	Value LP. Mils	LP. Mils
Produce extracted by Rightholders	22,504	337,560	7,127	2138.100	541	649.200	2,372	593.000	6,260	15.650	3733,510
Produce extracted by Traders	5,210	78,150	1,909	572.700	1,268	1521.600	1,365	341.250	6,571	16.427	2530.127
Total	27,714	415.710	9,036	2710.800	1,809	2170.800	3,737	934,250	12,831	32,077	6263.637

Note: Timber estimated value at 15 mils per piece
Charcoal " " at 1.200 mils per kantar (300 kgrms.)
Lime " " at 250 mils per kantar (300 kgrms.)
Firewood estimated value at 300 mils per kantar (300 kgrms.)
Olive suckers " " at 2½ mils per sucker

APPENDIX NO. 22

FOREST PRODUCE EXTRACTED UNDER TRADE LICENCES FROM FOREST RESERVES AND PRIVATE FORESTS FOR TRADE PURPOSES 1931/32

Forest Range	FOREST RESERVES						PRIVATE FOREST LAND						
	Timber Pieces	Firewood Kantars	Charcoal Kantars	Lime Kantars	Other Produce Kantars	Olive Suckers & Saplings No.	Timber Pieces	Timber Cubic Meters	Firewood Kantars	Charcoal Kantars	Lime Kantars	Other Produce Kantars	Protected Trees Felled No.
Jerusalem	850	99	—	—	—	—	—	--	420	3	7797	—	779
Hebron	—	—	61	470	—	—	—	—	1106	49½	13220	—	3186
Ramallah	—	—	—	—	—	—	—	—	408½	—	2995	—	569
Jaffa	—	—	—	100	—	—	54150	—	11703	29½	20842	—	4282
Gaza	—	—	—	—	—	—	—	—	760	—	—	—	236
Zicron Jacob	461	52	1	2150	—	—	22515	—	3496	810⅔	935	—	1552
Haifa	1459	300	621	--	—	757	819	—	2164	1040⅔	4085	32	329
Acre	745	20	2196½	—	—	1073	10	—	436½	1137⅔	10724	—	19
Nazareth	2409	706	24½	135	—	—	342	9	857	281½	4570	—	17688
Safad	410	1694	31	—	—	120	—	—	40	457	1595	—	4792
Tibarias	20	—	68½	—	—	—	—	—	320	3	1415	—	243
Nablus	582	32	–	—	—	15	—	—	956	216¾	7159	—	983
Tulkarm	—	2	—	—	—	1800	—	—	4265	13⅓	3425	—	968
Jenin	369	38	564½	—	—	2200	—	—	445	4349½	1775	—	47058
Baisan	—	255	—	—	47	—	—	—	65	—	10	16	900
Total:	7305	3198	3568	2855	47	5965	77836	9	27352	8392½	80547	48	83584

APPENDIX NO. 23

FOREST PRODUCE EXTRACTED UNDER TRADE LICENCES FROM FOREST RESERVES AND PRIVATE FORESTS FOR TRADE PURPOSES 1932/33

Forest Range	FOREST RESERVES						PRIVATE FOREST LAND						
	Timber Pieces	Firewood Kantars	Charcoal Kantars	Lime Kantars	Other Produce Kantars	Olive Suckers & Saplings No.	Timber Pieces	Firewood Kantars	Charcoal Kantars	Lime Kantars	Other Produce Kantars	Olive Suckers & Saplings No.	Protected Trees Felled No.
Jerusalem	580	36	—	—	—	—	—	559	19	8982	—	—	1677
Hebron	—	—	6	—	—	—	—	1274	227	6030	—	—	11560
Ramallah	—	—	—	—	—	—	—	465	3	2030	—	—	1188
Jaffa	—	—	—	—	—	—	70250	10258	19	—	—	—	4873
Ramleh	—	—	—	—	—	—	300	3397	—	18227	—	—	2420
Gaza	—	—	—	—	—	—	—	697	—	70	—	—	302
Haifa & Zicron-Jacob	1490	210	63	810	—	1370	6169	5658	2022	6525	—	30	2987
Acre	645	—	937	—	—	3181	747	295	3184	5192	—	870	—
Nazareth	1805	687	65	75	—	—	—	690	150	3892	—	—	1024
Safad	405	819	23	—	—	770	—	19	338	1525	—	—	1965
Tiberias	—	—	—	40	—	—	50	177	127	1025	—	—	6250
Nablus	115	5	—	—	—	1000	—	728	231	7459	—	—	391
Tulkarm	—	—	—	400	—	—	—	1337	—	2900	—	—	235
Jenin	160	—	174	40	—	250	—	122	4003	465	3	—	35408
Baisan	10	152	—	—	68	—	—	29	—	—	8	--	700
Total:	5210	1909	1268	1365	68	6571	77516	25705	10323	64322	11	900	70980

APPENDIX 24.

FOREST PRODUCE EXTRACTED FROM FOREST RESERVES UNDER RIGHTHOLDERS' LICENCES FOR DOMESTIC AND AGRICULTURAL PURPOSES 1931/32

Forest Range	Timber for house building and ploughs (Pieces)	Firewood for domestic purposes (Kantars)	Charcoal for domestic purposes (Kantars)	Lime for house building (Kantars)	Other Produce (Kantars)	Olive Suckers and saplings (Number)
Jerusalem	943	—	—	—	—	—
Hebron	6 C.L.	236	—	—	—	—
Ramallah	4	—	—	—	—	—
Jaffa	75	6	—	—	—	—
Gaza	—	—	—	—	—	—
Zicron Jacob	966	703	22	—	6	500
Haifa	850	1003	112	—	—	590
Acre	—	5470	73	—	—	350
Nazareth	410	434	13	—	—	—
Safad	1734	1200	83	—	—	—
Tiberias	—	—	—	—	—	—
Nablus	—	282	—	40	—	50700
Tulkarm	—	236	—	—	—	—
Jenin	—	2259	13	489	—	200
Baisan	5695	1	—	—	4	—
Total :	6 C.L. 10677	11830	316	529	10X	52340

C. L. : Camel Loads X: Reeds

APPENDIX 25.

FOREST PRODUCE EXTRACTED FTOM FOREST RESERVES UNDER RIGHTHOLDERS' LICENCES FOR DOMESTIC AND AGRICULTURAL PURPOSES 1932/33.

Forest Range	Timber for house building and ploughs (Pieces)	Firewood for domestic purposes (Kantars)	Charcoal for domestic purposes (Kantars)	Lime for house building (Kantars)	Other Produce (Kantars)	Olive Suckers and saplings (Nnmber)
Jerusalem	832	8	—	—	—	—
Hebron	4900	—	—	—	—	—
Ramallah	—	—	—	—	—	—
Jaffa	—	—	—	—	—	—
Ramleh	—	7	—	—	—	—
Gaza	—	—	—	—	—	—
Haifa and Zicron	315	1332	105	35	—	1430
Acre	—	2420	15	—	—	30
Nazareth	45	434	16	—	—	—
Safad	3529	941	37	—	—	—
Tiberias	—	—	—	—	—	—
Nablus	—	1134	—	—	—	500
Tulkarm	—	26	—	—	—	4300
Jenin	100	822	368	2337	—	—
Baisan	12883	3	—	—	16	—
Total :	22504	7127	541	2372	16	6260

APPENDIX No. 26.

ANIMALS LICENSED TO GRAZE IN FOREST RESERVES 1931/32.

Forest Range	RIGHTHOLDERS' ANIMALS							STRANGERS' ANIMALS				
	Goats	Sheep	Cows	Camels	Horses	Donkeys	Total	Goats	Sheep	Camels	Total	Grand Total
Jerusalem	1,301	41	462	502	—	—	2,306	—	—	—	—	2,306
Hebron	1,576	501	—	—	—	—	2,077	—	—	—	—	2,077
Ramallah	508	—	—	—	—	—	508	—	—	—	—	508
Jaffa	295	—	—	—	—	—	295	—	—	—	—	295
Gaza	—	—	—	—	—	—	—	—	—	—	—	—
Zichron Jacob	8,881	567	828	38	16	22	10,352	237	394	—	631	10,983
Haifa	11,130	217	810	—	—	—	12,157	—	—	—	—	12,157
Acre	20,443	159	40	—	—	—	20,642	—	—	—	—	20,642
Nazareth	4,568	624	726	—	—	20	5,938	—	—	—	—	5,938
Safad	10,175	6,390	—	—	—	—	16,565	—	—	—	—	16,565
Tiberias	—	—	—	—	—	—	—	—	—	—	—	—
Nablus	7,337	6,981	145	—	—	—	14,463	476	—	5	481	14,944
Tulkarm	—	—	—	—	—	—	—	—	—	—	—	—
Jenin	3,466	1,314	30	—	—	—	4,810	—	—	—	—	4,810
Baisan	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	69,680	16,794	3,041	540	16	42	90,113	713	394	5	1,112	91,225

APPENDIX No. 27.

ANIMALS LICENSED TO GRAZE IN FOREST RESERVES 1932/33.

Forest Range	RIGHTHOLDERS' ANIMALS					STRANGERS' ANIMALS					
	Goats	Sheep	Cows	Camels	Total	Goats	Sheep	Cows	Camels	Total	Grand Total
Jerusalem	1,499	40	202	703	2,444	—	—	—	70	70	2,514
Hebron	6,208	752	—	—	6,955	—	—	—	—	—	6,955
Ramallah	—	—	—	—	—	—	—	—	—	—	—
Jaffa	—	—	—	—	—	—	—	—	—	—	—
Ramleh	1,182	16	—	—	1,198	—	—	—	—	—	1,198
Gaza	—	—	—	—	—	—	—	—	—	—	—
Haifa and Zichron	16,471	752	4,361	8	21,592	212	1,740	80	443	2,475	24,067
Acre	3,144	—	90	—	3,234	—	—	—	—	—	3,234
Nazareth	3,296	709	552	—	4,557	—	—	—	—	—	4,557
Safad	5,290	1,130	—	—	6,420	—	—	—	—	—	6,420
Tiberias	1,250	—	—	—	1,250	—	—	—	—	—	1,250
Nablus	4,275	348	—	—	4,623	469	95	—	—	564	5,187
Tulkarm	697	20	—	—	717	70	—	—	—	70	787
Jenin	4,997	402	370	—	5,769	—	—	—	—	—	5,769
Baisan	—	—	—	—	—	—	—	—	—	—	—
TOTAL	48,304	4,169	5,575	711	58,759	751	1,835	80	513	3,179	61,938

FOREST LICENCES ISSUED 1931/32.

Forest Range	Forest reserves										Private forest land							
	Rightholders' licences			Trade licences							Trade licences							
	Timber Firewood, Charcoal, Lime et.	Grazing	Felling of protected trees.	Timber	Firewood	Charcoal	Lime	Other Produce	Olive Suckers and Saplings	Grazing Strangers' cattle.	Timber	Firewood	Charcoal	Lime	Other Produce	Felling of protected trees.	Removal Licences	Total
Jerusalem	10	47	—	7	12	—	—	—	—	—	—	41	3	148	—	70	23	361
Hebron	120	21	—	—	—	50	6	—	—	—	—	146	21	244	—	956	120	1,684
Ramallah	1	8	—	—	—	—	—	—	—	—	—	70	—	62	—	285	11	437
Jaffa	3	5	2	—	—	—	2	—	—	—	115	426	12	139	—	191	201	1,096
Gaza	—	—	—	—	—	—	—	—	—	—	—	91	—	—	—	62	1	154
Zicron Jacob	371	116	—	11	23	1	42	—	—	5	159	170	160	20	—	220	765	2,063
Haifa	318	125	8	39	58	305	13	—	12	—	10	289	314	78	5	734	213	2,521
Acre	1,061	149	—	34	2	882	—	—	21	—	1	36	419	99	—	1,133	74	3,916
Nazareth	237	84	—	47	170	10	3	—	—	—	12	164	74	125	—	373	124	1,423
Safad	616	81	—	32	399	22	—	—	—	—	—	26	243	31	—	658	14	2,122
Tiberias	—	—	—	1	—	39	—	—	—	—	—	48	—	32	—	61	1	182
Nablus	299	185	—	18	12	—	—	—	2	7	—	137	66	134	—	86	385	1,331
Tulkarm	118	—	—	—	1	—	8	—	18	—	—	93	3	77	—	90	102	510
Jenin	878	54	—	12	8	148	—	—	2	—	—	47	907	58	—	463	978	3,555
Baisan	46	—	—	—	33	—	—	24	—	—	—	7	—	1	2	25	15	153
TOTAL:	4,078	875	10	201	718	1,457	74	24	55	12	297	1,791	2,222	1,248	7	5,412	3,027	21,508

FOREST LICENCES ISSUED 1932/33.

Forest Range	FOREST RESERVES									PRIVATE FOREST LAND								TOTAL
	Rightholders' Licenses		Trade Licences							Trade Licenses								
	Timber, Firewood, Charcoal, Lime, etc.	Grazing	Timber	Firewood	Charcoal	Lime	Other Produe	Olive Suckers & Saplings	Grazing of Strangers' Cattle	Timber	Firewood	Charcoal	Lime	Other Produce	Olive Suckers & Saplinsg	Felling of Protected Trees	Removal of Forest Produce	
Jerusalem	13	45	4	6	—	—	—	—	4	—	61	6	187	—	—	126	4	456
Hebron	12	81	—	—	3	—	—	—	—	—	161	93	117	—	—	1,019	153	1,639
Ramallah	—	—	—	—	—	—	—	—	—	—	46	3	52	—	—	200	10	311
Jaffa	—	—	—	—	—	—	—	—	—	51	354	3	—	—	—	90	84	582
Ramleh	2	37	—	—	—	—	—	—	—	1	114	—	94	—	—	117	140	505
Gaza	—	—	—	—	—	—	—	—	—	—	57	—	1	—	—	67	38	163
Haifa and Zicron	679	206	38	119	33	19	—	8	36	111	591	490	123	—	1	1,066	795	4,315
Acre	486	28	10	—	280	—	—	41	—	14	36	1,297	106	—	12	2,470	917	5,697
Nazareth	234	71	25	113	23	2	—	—	—	—	126	45	120	—	—	328	99	1,186
Safad	436	36	12	203	13	—	—	6	—	—	7	206	26	—	—	432	5	1,382
Tiberias	—	13	—	—	—	1	—	—	—	1	39	73	21	—	—	107	—	255
Nablus	572	73	3	2	—	—	—	2	7	—	108	68	179	—	—	91	269	1,374
Tulkarm	26	6	—	—	—	8	—	—	1	—	72	—	60	—	—	81	69	323
Jenin	737	80	3	—	126	2	—	1	—	—	40	778	16	—	—	295	784	2,862
Baisan	68	—	1	20	—	—	19	—	—	—	6	—	—	4	—	21	13	152
TOTAL	3,265	676	96	463	478	32	19	58	48	178	1,818	3,062	1,102	4	13	6,510	3,380	21,202

FOREST REVENUE BY FOREST RANGES 1931/32

Month	Jerusalem £P. Mils	Hebron £P. Mils	Ramallah £P. Mils	Jaffa £P. Mils	Gaza £P. Mils	Zicron £P. Mils	Haifa £P. Mils	Acre £P. Mils	Nazareth £P. Mils	Safad £P. Mils	Tiberias £P. Mils	Nablus £P. Mils	Tulkarm £P. Mils	Jenin £P. Mils	Baisan £P. Mils	Grand Total £P. Mils
April, 1931	12.990	30,380	3,360	55,900	1.640	25.565	58,475	49.705	17.510	15.360	2.260	26.810	34.470	39.600	2.000	376.025
May, 1931	19.600	16.460	6,920	44.685	0.730	8,113	21.895	39.140	20.365	19.700	2.775	16.600	7.480	29.600	1.300	255,363
June, 1931	8.010	17.670	2.470	61.530	3.870	35,705	28,415	26.305	20.790	10,135	2.190	15.680	2.540	52.640	1.550	289.500
July, 1931	6.400	17.480	11.350	43,085	0.420	29.532	30,640	59.025	31.115	18.770	7.710	25.459	23.545	105.030	0.770	419.331
August, 1931	22.400	43.720	17.070	52,405	1.580	29.868	67.209	88.665	33.090	31.230	10.060	56.700	20.025	91.910	2.630	568.572
September, 1931	24.710	72.740	21.910	64,470	2.310	44,523	45,260	137.290	29.620	28.615	7.155	39.460	47.025	162.710	3.850	731.648
October, 1931	35.445	63.380	10.580	89.785	3.770	44,766	88.370	204.700	44,315	58.305	16.110	42.920	37.280	130,290	2.140	872.156
November, 1931	17.380	40.210	2.080	80.305	3,220	30.124	75,175	120.395	24.565	39,385	2,575	28.735	43.195	127,360	1.690	636.394
December, 1931	10.520	28.000	5,250	109.670	14,870	49,367	40.960	53.045	14.100	16.820	—	18.425	45.430	121,750	1.010	529.217
January, 1932	14.740	24.570	9.460	102,430	3,590	56.351	44.625	42.760	15.230	4.015	2,500	16.575	45,890	76,700	1.910	461.346
February, 1932	6.710	7.870	2,940	43,235	0,680	42.623	54,405	76.164	12.480	8.350	2.480	14.563	7.390	104.020	7.405	391.315
March, 1932	14.130	19.570	4.630	57.870	2,580	47.548	88,855	119.780	20,175	15.610	5.520	17.154	23.440	88.430	13.140	538.432
TOTAL:	193.035	382,050	98,020	805.370	48,260	444.085	644.284	1,016.974	283.355	266.295	61.335	319,081	517,210*	1,120.040	39,395	6,228,789x

* : Includes a sum of £P. 159.500 mils — value of grass from Kakoun and Sheikh Mohammad Forest Reserves issued to Acre Stud Farm and Agricultural Station and Agricultural School Tulkarm:

APPENDIX No. 31.

FOREST REVENUE BY FOREST RANGES 1932/33

Month		Jerusalem £P. Mils	Hebron £P. Mils	Ramallah £P. Mils	Jaffa £P. Mils	Ramleh £P. Mils	Gaza £P. Mils	Haifa and Zicron £P. Mils	Acre £P. Mils	Nazareth £P. Mils	Safad £P. Mils	Tiberias £P. Mils	Nablus £P. Mils	Tulkarm £P. Mils	Jenin £P. Mils	Baisan £P. Mils	Total £P. Mils
April,	1932	16.120	13.850	6.080	18.990	21.940	1,800	52.602	67.655	21,580	6.050	6.800	29.048	14,400	64,894	2.995	344.764
May	"	12.430	5.120	9.110	28.270	14,790	0,510	34.685	49.270	13.755	17.080	2.650	9.465	4.850	21.605	4.187	227.777
June	"	17.950	15.380	5.720	38.335	24.800	0,230	28.765	27,465	15,665	11,080	1.600	13.290	5.500	29.420	8.877	244.077
July,	"	11.900	14.380	5.290	37.770	47,470	3.270	38.973	83.875	32.340	2,770	2.780	33.340	4.860	74.315	1.830	395.163
August,	"	20.760	28.610	12.690	42.650	51.850	11.720	74.015	87.670	16.595	17.280	5.840	48.340	32.526	90.330	7.530	548.406
September,	"	42.450	36.500	9.170	53.180	32.480	2.310	104.753	160.154	26.820	13.760	17.070	47.790	33.175	104.085	1.750	685.438
October,	"	21.970	38.930	13.320	53.745	42.770	7.210	121.745	187.445	41,960	43.185	9.870	39.745	18.663	108.100	2.560	751.218
November,	"	28.485	29.280	3.570	27.650	30.520	0.550	86.608	82.305	16.515	32,500	0.660	14.700	6.710	99.020	5.440	464.513
December,	"	17.210	16.540	3.790	54.040	47.150	8.880	82.740	55,335	13.235	18.125	1.360	22,565	2.010	119 795	1.730	464,505
January,	1933	8.670	18.740	1.690	49.430	33.480	3.650	68.560	75.719	6.515	5.840	0.810	17.145	2.550	71.150	0,120	364.069
February,	"	9.090	13.165	0.350	19.930	26.100	7.690	85.625	116.228	10.660	4.390	2.150	12,430	4.370	59.310	0.430	371.919
March,	"	10.050	27.275	7.460	44.070	32.710	3.380	121,870	74.735	12.650	10,490	6.640	4.270	8.650	77.490	7.295	449.035
TOTAL :		217.085	257.770	78.240	468.060	406.060	51.200	900942	1,067.847	228.290	182.550	58.230	292.128	245,564 xx	919,514	44.704	5,418.384

xx : Includes a sum of £P. 107.500 mils — value of grass from Kakoun and Sheikh Mohammad Forest Reserves issued to Acre Stud Farm and Agricultural Station and Agricultural School Tulkarm.

FOREST REVENUE BY CATEGORIES OF PRODUCE 1931/32.

Month	FOREST RESERVES											PRIVATE FOREST LAND						Sale of Nursery Produce	Sale of Confiscated Produce	Compensation for Forest Offences	Total
	Trade Licences							Dept. Sale of Forest Produce	Rightholders' Licences			Trade Licences									
	Timber	Firewood	Charcoal	Lime	Other Produce	Olive Suckers and saplings	Grazing		Timber Firewood Charcoal Lime etc.	Grazing	Felling of Protected Trees	Timber	Firewood	Charcoal	Lime	Other Produce	Felling of Protected Trees				
	LP.Mils	LP. Mils	LP. Mils	LP. Mils	LP.Mils	LP.Mils	LP.Mils	LP. Mils	LP. Mils	LP.Mils	LP.Mils	LP.Mils	LP. Mils	LP. Mils	LP. Mils	LP.Mils	LP.Mils	LP.Mils	LP. Mils	LP.Mils	LP. Mils
April, 1931	—	12.350	68.000	9.000	0.300	—	0.050	—	8.950	4.700	0.090	5.705	97.715	53.900	106.240	—	1.340	—	4.685	3.000	376.025
May, 1931	1.650	13.325	35.750	3,000	0:200	—	—	—	6.100	4.300	—	4,228	56.700	32.500	82.250	—	1,580	10.000	2.880	0.900	255.363
June, 1931	0.800	11,800	21.625	13.500	0.050	—	1.400	—	14.350	0.950	—	5,285	77.550	51.270	74.360	—	3.770	10.320	1.470	1.000	289.500
July, 1931	8.390	12.900	70.795	7.500	0.200	—	—	3.700	34.150	0.500	—	7.077	58.690	86.825	109.860	—	5.390	—	12,854	0.500	419.331
August, 1931	4.905	16,750	108.875	9,900	0,450	—	—	0.650	29;550	0.300	0.010	8.198	73.280	110.884	194.300	—	6.520	—	3.490	0.500	568.562
September, 1931	12.080	16.775	124.125	31.800	0.700	—	—	2.880	21.150	—	—	9.813	92.435	200.700	210.740	—	4.710	0.140	3.150	0.450	731,648
October, 1931	17.700	18,000	131.275	14,250	0.250	—	—	10.350	38.200	7.250	—	26.951	123.880	270.545	186.230	0.480	9.240	0.925	11.630	5.000	872.156
November, 1931	13.020	13.200	77.750	7.350	0.100	—	—	2.240	27.900	1.800	—	6'114	140.320	235.365	80.590	0.160	6.960	10.000	11.025	2.500	636.394
December, 1931	4.590	14.200	29.875	2.850	—	—	2.000	1.300	22.350	1.250	—	6,917	193.085	177.565	47.320	1,275	3.590	6.500	13.550	1,000	529.217
January, 1932	2.550	9.780	51.125	—	—	3.150	2.148	1.060	1.000	2.150	—	6.513	162.340	151'835	40.100	—	3.330	1.750	20.765	1.750	461.346
February, 1932	1.550	10.895	70.125	6.000	0.100	4.569	0.248	7.050	0.750	7.650	—	2.498	78.160	146,530	38.100	—	3.260	1.070	11,010	1.750	391.315
March, 1932	3.100	7.725	104,000	12.000	—	0.210	2.400	15.550	3.000	12.900	—	6.013	97.825	164.420	90.650	—	4.430	—	14.209	—	538.432
TOTAL:	70.335	157.700	893.320	117.150	2.350	7.929	8,246	204,280x	207.450	43.750	0.100	95.312	1,251.980	1.682.339	1,260.740	1.915	54.120	40.705	110.718	18.350	6,228:789x

SUMMARY

Year	FOREST RESERVES			Total	Private Forest Land	Sale of Nursery Produce	Sale of Confiscated Produce	Compensation for Forest Offences	Grand Total
	Trade Licences	Dept. Sale of Forest Produce	Rightholders Licences		Trade Licences				
	£P. Mils	£P. Mils	LP. Mils	£P. Mils	£P. Mils	£P. Mils	£P. Mils	£P. Mils	£P. Mils
1931/32	1,257.030	204.280x	251.300	1,553.110	4,346.406	40.705	110.718	18.350	6,228.789x

x: Includes a sum of LP; 159;500 mils — value of grass from Kakoun and Sheikh Mohammad Foret Reserves issued to Acre Stud Farm and Agricultural Station and Agricultural School Tulkarm.

APPENDIX 33.

FOREST REVENUE BY CATEGORIES OF PRODUCE 1932/33

Month	FOREST RESERVES										PRIVATE FOREST LAND										
	Trade Licences							Dept. Sale of Forest Produce	Rightholders' Lic.		Trade Licences							Sale of Nursery Produce	Sale of Confiscated Produce	Compensation for Forest Offences	Grand Total
	Timber	Firewood	Charcoal	Lime	Other Produce	Olive Suckers & Saplings	Grazing		Timber Firewood Charcoal Lime etc.	Grazing	Timber	Firewood	Charcoal	Lime	Other Produce	Olive Suckers & Saplings	Felling of Protected Trees				
	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils
April, 1932	0.700	5.500	29.125	4.350	0.300	—	—	1.950	4.100	5.850	2.132	63.755	122.279	93.780	—	—	2.400	3.595	4.948	—	344.764
May, "	—	8.975	13.250	1.500	—	—	—	0.160	5.150	1.300	7.895	48.830	63.250	60.770	0.120	—	4.160	—	10.817	2.000	227.777
June, "	—	7.750	11.875	4.500	0.500	—	—	1.900	3.900	3.600	9.575	61.670	49.060	80.060	0.080	—	3.670	—	3.937	2.000	244.077
July, "	2.300	5.875	32.000	0.900	0.200	—	—	1.200	15.250	1.400	3.093	107.315	127.600	89.910	—	—	5.220	7.250	4.650	—	395.163
August, "	4.850	17.350	35.750	2.100	0.400	—	—	5.100	19 900	0.350	11.705	136.191	156.600	143.210	—	—	7.600	—	3.350	3.950	548.406
September, "	18.040	7.175	48.125	9.900	0.650	—	0.700	0.100	9.500	0.400	29.973	108.750	235.500	186.700	0.240	—	6.110	—	5.575	—	685.438
October, "	15.150	11.800	44.150	6.700	—	—	—	—	23.825	0.450	15.820	111.995	359.430	146.520	—	—	7.790	—	5.463	2.000	751.218
November, "	5.500	11.475	22.000	4.500	0.350	0.125	0.465	1.900	30.400	0.900	4.038	88.945	214.335	62.650	—	—	5 620	0.085	6.130	5.000	464.513
December, "	1.850	7.000	16.750	—	1.000	0.210	4.235	—	23.800	3.790	9.075	138.235	201.000	43.140	—	0.810	4.690	0.350	4.680	0.500	464.505
January, 1933	1.550	5.500	12.125	—	—	3.600	1.465	—	4.750	6.200	2.550	101.395	177.950	30.770	—	1.040	3.850	2.750	3.170	—	364.069
February, "	0.870	3.550	36.938	3.000	—	9.004	0.830	—	3.150	4.200	1.176	59.480	190.440	44.880	—	0.180	7.980	7.950	5.165	—	371.919
March, "	0.300	4.075	23.375	3.000	—	1.500	0.560	6.795	16.650	6.600	1.310	101.860	148.765	83.240	—	—	5.550	2.500	44.455	—	449.035
Total	51.110	96.025	316.463	40.450	3.400	14.439	8.255	126.605x	160.375	35.040	98.342	1,128.021	2,064.209	1,065.630	0.440	2.660	64.640	24.490	102.340	15.450	5,418.384x

SUMMARY

Year	FOREST RESERVES			Total	Private Forest Land	Sale of Nursery Produce	Sale of Confiscated Produce	Compensation for Forest Offences	Grand Total
	Trade Licences	Dept. Sale of Forest Produce	Rightholders Licences		Trade Licences				
	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils	LP. Mils
1932/1933	530.142	126.605	195.415	852.162	4,423.942	24,490	102,340	15.450	5,418.384*

*: Includes a sum of £P.107.500 mils—value of grass from Kakoum and Sheikh Mohammad Forest Reserves issued to Acre Stud Farm and Agricultural Station and Agricultural School Tulkarm.

APPENDIX 34.

OLIVE PROPAGATION 1931—32.

Sub-District	Olive Suckers Extracted from Forest Reserves under Licences.	Olive Suckers Extracted from Private Groves	TOTAL
Jerusalem	—	2,439	2,439
Ramallah	—	14,425	14,425
Hebron	—	2,140	2,140
Jericho	—	—	—
Bethlehem	—	795	795
Ramleh	—	3,332	3,332
Haifa	1,347	2,578	3,925
Acre	1,650	—	1,650
Zicron	500	9,090	9,590
Tulkarm	1,300	16,040	17,340
Nazareth	3,255	325	3,580
Nablus	150	33,625	33,775
Jenin	2,400	24,920	27,320
Tiberias	—	300	300
Baisan	15	500	515
Safad	920	40	960
TOTAL:	11,537	110,549	122,086

OLIVE PROPAGATION 1932/33.

Sub-District	Olive Suckers Extracted from Forest Reserves under Licences	Olive Suckers Extracted from Forest Reserves by Government			Rooted Olive Suckers Issued from Government Nurseries	Olive Suckers Extracted from Private Groves	Total
		Issued Free to the Public	Issued to Government Nurseries and Plantations	Olive Suckers Sold			
Jerusalem	—	13,669	2,018	300	—	431	24,418
Ramallah	—	6,827	—	—	—	14,894	21,721
Hebron	—	—	—	—	—	1,306	1,306
Jaffa	—	175	—	—	—	—	175
Ramleh	—	250	—	—	—	7,065	7,315
Gaza	—	2,590	595	—	—	—	3,185
Majdal	—	—	2,500	—	—	—	2,500
Beersheba	—	335	—	—	—	—	335
Haifa	2,295	—	—	—	—	800	3,095
Acre	4,298	—	1,500	—	—	855	6,653
Zicron-Jacob	600	—	—	—	—	6,685	7,285
Tulkarm	2,000	—	—	—	—	13,045	15,045
Nazareth	6,995	—	500	1,810	600	1,250	11,155
Safad	495	—	2,500	—	—	1,900	4,895
Nablus	1,500	—	—	—	—	55,014	56,514
Jenin	—	—	—	—	—	14,500	14,500
Tiberias	—	1,800	5,491	—	—	4,100	11,391
Beisan	—	2,000	500	—	124	—	2,624
Total	18,183	27,646	15,604	2,110	724	129,845	194,112

APPENDIX No 36.

BALANCE OF TRADE IN FOREST PRODUCTS 1931/32

Kind of Product	Exports £P.	Imports. £P.	Excess of Exports Over Imports £P.	Excess of Imports Over Exports £P.	Net Excess of Imports Over Exports £P.
Hoops for orange cases.	—	6,854	—	6,854	
Olive wood manufactures.	2,207	—	2,207	—	
Other wood and Timber.	—	147,460	—	147,460	
Wood for furniture.	—	16,589	—	16,589	
Wood for orange cases.	—	115,924	—	115,924	
Other Wood manufactures.	25	11,086	—	11,061	
Furniture.	588	17,648	—	17,060	
Tanning substances.	209	4,194	—	3,985	
Thyme essence.	20	—	20	-	
Charcoal and firewood.	886	193	693	—	
Matches.	—	392	—	392	
Plants and shrubs.	480	1,694	—	1,214	
Tar aud Pitch.	—	1,301	—	1,301	
Empty barrels and cases,	—	531	—	531	
Wooden staves.	—	903	—	903	
Carts and Carriages.	512	901	—	389	
Other basket ware.	72	1,196	—	1,124	
Ply wood.	—	7,265	—	7,265	
Cork wood.	—	276	—	276	
Trunks and branches of trees.	—	5,711	—	5,711	
Gums and resins.	--	914	—	914	
Paper for packing oranges.	—	22,089	—	22,089	
Paper for printing.	—	24,642	—	24,642	
Paper for other packing.	—	16,737	—	16,737	
Cardboards.	—	10.002	—	10,002	
Empty paper & cardbords boxes.	2,570	194	2,376	—	
Paper & carboard manufactures.	1,215	11,329	—	10,114	
Cork manufactures.	871	188	683	—	
Total 1931/32	9,655	426.213			416,558
Total 1930 ;	8,989	479,951			470,962
" 1929 :	11,200	469,936			458,736
" 1928 :	8,135	436,419			428,284
" 1927 :	5,816	253,322			247,506
" 1926 ;	5,091	405,920			400,829
" 1925 :	9,075	441,292			432,217
" 1924 ;	9,420	271,779			262,359
" 1923 :	7,785	248,036			240,251
" 1922 :	5,825	148,250			142,425

APPENDIX 37.

BALANCE OF TRADE IN FOREST PRODUCTS 1932/33.

Kind of Product.	Exports £P.	Imports £P.	Excess of Exports Over Imports £P.	Excess of Imports Over Exports £P.	Net Excess of Imports Over Exports £P.
Hoops for orange cases	—	11,202	—	11,202	
Wood for furniture	—	19,123	—	19,123	
Olive wood manufactures	1,455	—	1,454	—	
Wood for orange cases	—	181,564	—	181,564	
Other wood and timber	—	185,010	—	185,010	
Other wood manufactures	1,836	21,411	—	19,575	
Furniture	507	22,270	—	21,763	
Tanning substances	87	4,362	—	4,275	
Thyme essence	1,741	—	1,741	—	
Charcoal and firewood	1,101	183	918	—	
Matches	—	87	—	87	
Plants and shrubs	316	2,939	—	2,623	
Tar and pitch	—	1,454	—	1,454	
Empty barrels and cases	—	1,076	—	1,076	
Carts and carriages	42	469	—	427	
Other basket ware	83	311	—	228	
Ply wood	—	18.079	—	18,079	
Cork wood	—	229	—	229	
Trunks and branches of trees	—	7,200	—	7,200	
Gums and resins	2	1,944	—	1,942	
Paper for packing oranges	—	34,653	—	34,653	
Paper for printing	—	27,235	—	27,235	
Paper for other packing	—	25,427	—	25,427	
Cardboards	—	14,236	—	14,236	
Empty paper & cardboard boxes	1,131	192	939	—	
Paper & cardboard manufactures	991	13,758	—	12,767	
Cork manufactures	677	3,911	—	3,234	
Wooden staves	—	428	—	428	
Total 1932/33	9,968	598,753			588,785
Total 1931	9,655	426,213			416,558
Total 1930	8,989	479,951			470,962
Total 1929	11,200	469,936			458,736
Total 1928	8,135	436,419			428,284
Total 1927	5,816	253,322			247,506
Total 1926	5,091	405.920			400,829
Total 1925	9,075	441,292			432,217
Total 1924	9,420	271,779			262,359
Total 1923	7,785	248,036			240,251
Total 1922	5,825	148,250			142,425

APPENDIX 38.

FOREST OFFENCES 1931—32.

Month.	Cases taken to Court				Cases Compounded		Total Number of Cases
	No. of Persons Prosecuted	No. of Persons Convicted	No. of Persons Acquitted	Amount of Fines Imposed by Court LP. Mils	No. of Cases	Amount of Compensation LP. Mils	
April, 1931	108	101	7	67.400	2	3.000	110
May, "	170	123	47	36.610	3	0.900	173
June, "	47	43	4	14.850	1	1.000	48
July, "	39	27	12	10.050	1	0.500	40
August, "	29	16	13	4.550	1	0.500	30
September, "	45	35	10	10.050	2	0.450	47
October, "	60	54	6	17.200	1	5.000	61
November, "	42	35	7	28.500	1	2.500	43
December, "	67	62	5	25.000	3	0.750	70
January 1932	78	72	6	57.500	3	1.750	81
February "	60	47	13	14.700	4	1.750	64
March "	119	91	28	40.950	—	—	119
Total	864	706	158	327.360	22	18.100	886

SUMMARY — ANALYSIS OF CASES.

1. Damage to Forests by Fire	9
2. Unauthorised possession of Forest Produce	70
3. Unauthorised fellings	514
4. Unauthorised grazing	112
5. Land encroachments	39
6. Miscellaneous	142
Total:	886

APPENDIX 39.

FOREST OFFENCES 1932/33.

Month	Cases taken to Court				Cases Compounded		Total Number of Cases
	No. of Persons Prosecuted	No. of Persons Convicted	No. of Persons Acquitted	Amount of Fines Imposed by Court LP. Mils	No. of Cases	Amount of Compensation LP. Mils	
April, 1932	62	58	4	26.260	—	—	62
May, "	87	85	2	18.380	1	2.000	88
June, "	32	18	14	4.980	2	2.000	34
July, "	97	90	7	27.050	—	—	97
August, "	27	25	2	5.600	5	3.950	32
September, "	134	116	18	46.400	—	—	134
October, "	188	184	4	73.200	1	2.000	189
November, "	110	93	17	48.600	2	5.000	112
December, "	93	81	12	55.050	1	0.500	94
January, 1933	190	156	34	39.150	—	—	190
February "	321	280	41	125.200	—	—	321
March "	107	95	12	93.400	—	—	107
Total	1,448	1,281	167	563.270	12	15.450	1,460

SUMMARY — ANALYSES OF CASES

1. Damage to Forests by Fire	8
2. Unauthorised possesion of Forest Produce	139
3. Unauthorised fellings	829
4. Unauthorised grazing	118
5. Land encroachments	71
6. Miscellaneous	295
	1,460

APPENDIX 40.

LIST OF EXOTICS INTRODUCED 1931/32.

A. BY EXCHANGE.

Species	Country of Origin
Cedrus argentea, Renou	Algeria
Juniperus phoenicea	,,
Eucalyptus Trabutii	,,
Bauhinia aculeata	,,
Ampelopsis quinquefolia	,,
Taxodium distichum	,,
Cupressus goveniana	,,
Pinus pinaster, soland	,,
Juniperus oxycedrus	,,
Yucca aloeifolia	,,
Caesalpinia spinosa	Royal Botanic Gardens, Kew, Englond
Opuntia tuna	Egypt
Opuntia paraguayensis	,,
Cereus trigonum	,,
Cereus Jamacaru	,,
Prosopis spicigera	,,
Prosopis juliflora	,,
Erythrina acanthocarpa	,,
Cynodon dactylon (Royal Cape Strain)	Union of South Africa
Myoporum montanum	South Australia
Heterodendron oleifolium	,, ,,
Eremophila sp.	,, ,,
Callitris quadrivalvis	French Morocco, through Govt. of Lebanon
Pinus coraiensis	U.S.S.R.
Pinus sibirica	,,
Cedrus libani	,,
Pinus laricio, var pallasiana	,,
Pinus pithyusa, var stankewiezi	,,
Cistus tauricus	,,
Euphorbia biglandulosa	,,
Euphorbia helioscoparia	,,
Euphorbia myrsinites	,,
Euphorbia petrophila	,,
Euphorbia stricta	,,
Euphorbia virgata	,,
Crocus susiana	,,
Iris pumila	,,
Cedrus libani	,,
Cedrus atlantica	,,
Cupressus macnabiana	,,
Thujopsis delabrata	,,
Rhus aromatica	,,
Rhus toxicodendron	,,
Opuntia arborescens	,,
Opuntia comanchica	,,
Liquidambar styraciflua	,,
Genista tinctoria	,,
Laburnum anagyroides alshingeri	,,
Trachycarpus excelsa	,,
Celtis glabrata	,,
Butirospermum parkii	Gold Coast
Cymbopogon citratus	,, ,,
Areca catechu	,, ,,
Jatropha curcas	,, ,,
Eugenia jambos	,, ,,
Cassia alata	,, ,,
Cassia siberiana	,, ,,
Cassia occidentalis	,, ,,
Anigozanthus manglesii	Western Australia
Eucalyptus caesia	,, ,,
Eucalyptus crucis	,, ,,
Eucalyptus steedmanii	,, ,,
Acacia podalyriaefolia	,, ,,

Species	Country of Origin
Hakea eucalyptoides	Western Australia
Grevillea wilsoni	” ”
Chamaelaneum ciliatum	” ”
Brachychiton acerifolium	Gold Coast
Melia azadirachta	” ”
Sterculia foetida	” ”
Grevillea robusta	
Agathis australis	New Zealand
Cereus peruvianus	Gold Coast
Acacia arabica	Ggypt
Erharta villosa	South Australia
Prosopis juliflora	Egypt
Jacaranda mimosaefolia	”
Juniperus utahensis	U.S.A.
Pinus ponderosa	”
Eugenia jambolana	Gold Coast
Caesalpinia spinosa	Royal Botanic Gardens, Kew
Juglans cordiformis	Japan, through R.B.G. Kew
Sempervivum arachnoideum	Germany
Sedum reflexum	”
Sedum album	”
Sedum dasyphyllum	”
Sedum boloniense	”
Sempervivum globiferum	”
Sempervivum funkii	”
Sempervivum tectorum	”
Fraxinus excelsior var. pendula	”
Mimosa pudica	”
Chamaecyparis lawsoniana	”
Eupuorbia peplus	”
Jasminum odoratissimum	”
Euphorbia palustris	”
Opuntia raffinesquei	”
Picea pungens	”
Ginkgo biloba	”
Cotoneaster horizontalis	”
Euphorbia verrucosa	”
Fraxinus excelsior, var. monophylla	”
Cytisus alibus	England
Cornus florida	”
Magnolia yulan	”
Syringa vulgaris	”
Rhododendron sp.	”
Azalea sinensis	”
Hibiscus syriacus	”
Berberis thunbergii	”
Hamamelis virginiana	”
Hibiscus sp.	”
Colutea arborescens	”
Spartium junceum	”
Cytisus scoparius var. adrianus	”
Saxifraga aizoon	”
Calycanthus floridus	”
Salvia coccinea	”
Platycodon grandiflorum, mariesii	”
Lycium chinense	”
Berberis japonica	”
Saxifraga longifolia	”
Dianthus suavis	”
Hieracium villosum	”
Arabis alpina	”
Androsace primuloides	”
Veronica incana	”
Saxifraga cochlearis	”
Gentiana septemfida	”
Helianthemum tuber aria	”
Potentilla nepalensis	”

Species	Country of Origin
Cistus ladaniferus	England
Sedum spathulifolium	"
Saxifraga sternbergii	"
Dianthus deltoides	"
Lithospermum prostratum	"
Eryngium alpinum	"
Papaver nudicaule	"
Sedum acre	"
Genista sagittalis	"
Allissum saxatile, compactum	"
Heuchera sanguinea	"
Dianthus caesius superbus	"
Papaver alpinum	"
Primula auricola	Lebanon
Tetraclinis articulata	France

B. BY PURCHASE.

Cedrus deodara	France
Cupressus arizonica	"
" macrocarpa	"
" lusitanica	"
" benthani	"
Pinus canariensis	"
" insignis	"
Sequoia gigantea	"
" sempervirens	"
Acer negundo	"
Acacia pycnantha	"
" saligna	"
Juglans regia	Palestine
Castanea vesca	"

APPENDIX No. 41.

LIST OF EXOTICS INTRODUCED IN 1932/33.

A. BY EXCHANGE.

Species	Country of Origin
Platanus orientalis	Cyprus
Acer obtusifolia	"
Casuarina cunninghamiana	U.S.A.
Amygdalus davidiana	"
Cydonia japonica	"
Aronia arbutifolia	"
Amorpha fruticosa	"
Armeria bupleuroides	"
Alnus rubra	"
Brachychiton sp.	"
Catalpa speciosa	"
Acacia lophantha	"
Sunflower (red and gold)	"
Acacia melanoxylon	"
Aleurites fordii	"
Cistus villosus	"
Hibiscus syriacus	"
Celtis autralis	"
Cladrastis lutea	"
Mesembrianthemum angulatum	"
Cotoneaster heterophylla	"
" divaricata	"
Viburnum acerifolium	"
Melaleuca leucadendron	"
Cassia nictitans	"
Pyracantha angustifolia	"
Convallaria majalis	"
Euonymus bungeanus	"
" semipersistens	"
Cassia marilandica	"
Lonicera maackii	"
Ampelopsis quinquefolia	"
" brevipedunculata	"
Ligustrum acutissimum	"
Viburnum lantana	"
Acacia auriculaeformis	"
Clematis vitalba	"
Bignonia radicans	"
Mesembrianthemum cordifolium	"
Acacia melanoxylon	"
Prunus tomentosa	"
Pyracantha crenata—serrata	"
Cladrastis lutea	"
Sambucus canadensis	"
Ephedra altissima	"
Syringa japonica	"
Clematis serratifolia	"
Cornus florida	"
Wisteria sinensis	"
Ligustrum acutissimum	"
Amygdalus davidiana	"
Clematis heracleafolia	"
Ligustrum sinensis	"
Cotoneaster zabeli	"
Syringa vulgaris	"
Sambucus racemosa	"
Euonymus alatus	"
Ligustrum walkeri	"
Cotoneaster foveolata	"
Salvia pratensis	"
Rhamnus dahurica nipponica	"
Pyracantha gibbzii	"
Callistemon citrinus	"

Species	Country of Origin
Caesalpinia pulcherrima	U.S.A.
Cercis chinensis	"
Magnolia acuminata	"
Catalpa ovata	"
Prunus pseudocerasus	"
Catalpa bungei	"
Photinia arbutifolia	"
Amorpha californica	"
Pinus coulteri	"
Cercidium torreyanum	"
Ceanothus cordulatus	"
Vitex negundo	"
Styrax officinalis	"
Ceanothus thyrsiflorus	"
Rhamnus californica	"
Ceanothus crassifolius	"
Albizzia lebbek	"
Bauhinia alba	"
Cestrum diurnum	"
Tecoma stans	"
Duranta repens (D. plumieri)	"
Cassia suffruticosa	"
" populnea	"
Caesalpinia tinctoria	"
Cassia sophera	"
Caesalpinia pulcherrima (yellow var.)	"
Cryptostegia grandiflora	"
Cassia fistula	"
Caesalpinia sappan	"
Caesalpinia pulcherrima	"
Cryptostegia madagascariensis	"
" grandiflora	"
Citharexylum berlandieri	"
Cestrum diurnum	"
Podocarpus spicatus	New-Zealand
Sophora tetraptera	U.S.A.
Cordyline indivisa	"
Leptospermum scoparium	"
Metrosideros diffusa	"
" tomentosa	"
Rhopalestris sapida	"
Casia surattensis	"
Bignonia speceiosa	"
Tecoma argentea	"
Ficus brevifolia	"
Metrosideros tomentosa	Australia
Cedrus libani	Lebanon
Quercus alnifolia	Cyprus
Sophora japonica	France
Prosopis juliflora	Egypt
Juglans nigra	U.S.A.
Koelreuteria paniculata	"
Tilia cordata	"
" americana	"
Euonymus radicans	"
Crataegus crus-galli	"
Lagerstroemia speciosa	"
Eucalyptus algeriensis	"
Juniperus sinensis	"
" virginiana	"
Pyracantha coccinea	"
" yunnanensis	"
Amelanchier canadensis	"
Berberis thunbergi	"
Crataegus coccinea	"
" crus galli	"
" oxycantha	"

Species	Country of Origin
Magnolia glauca	U.S.A.
" grandiflora	"
Populus deltoidea	"
Quercus coccinea	"
" rubra	"
Viburnum lantana	"
" opulus	"
Clematis paniculata	"
Medicago sativa	France
Fagopyrum tataricum	"
Duranta repens alba	U.S.A.
Phoenix canariensis	"
Sabal Palmetto	"
Aesculus hippocastanum	"
Viburnum carlesi	"
Ilex aquifolium	"
Chamaecyparis lawsoniana	"
Cotoneaster horizontalis	"
Crataegus cordata	"
Cotoneaster francheti	"
Argania sideroxylon	Morocco
Chamaecyparis obtusa	France
" filifera	"
Thuja plicata	"
Pinus jeffreyi	"
" ponderosa	"
" murrayana	"
Lagerstroemia indica	"
Lespedeza bicolor	"
Cotoneaster pannosa	"
Juniperus californica	"
Cedrus libanotica	"
Nicotiana sanderiana	England
Lupinus arboreus albus	"
Lycium chinense	"

B. By Purchase.

Acer negundo	France
Cupressus arizonica	Austria
" macrocarpa	"
Robinia pseudoacaia	"
Cedrus deodara	"
" atlantica	"
Pinus canariensis	"
" insignis	"
Tetraclinis articulata	France
Eucalyptus corynocalyx	"
" crebra	"
" hemiphloea	"
" leucoxylon	"
" longifolia	"
" piperita	"
" regnans	"
" resinifera	"
" tereticornis	"

APPENDIX No. 42.

LIST OF SEEDS ISSUED FROM EXCHANGE BUREAU 1931/32

Local Correspondents	No. of Spacies	Foreign Correspondents	No. of Species
Assad Effendi Said, Beit Mahseer village.	4	Department of Agriculture Gold Coast.	62
Palestine Railways, Haifa	2	Department of Agriculture, West Australia,	8
Kadoorie Arab Agricultural School Tulkarm.	17	Botanical Gardens, Nikita, U. S. S. R.	5
Men of the Trees in Palestine	1	The Middle Egypt Botanic Station. El-Saff.	5
Palestine Railways, Lydda.	1	Horticultural Station. Giza.Egypt.	10
Childrens' Village Shfeya.	12	United States of America Department of Agriculture.	9
Girls Nurseries, Jerusalem.	2	Bob Smith's Rare Plant Gardens, Memphis, U. S. A.	27
		John Innes Horticultural Institution London.	9
Total:	39	Total:	135

APPENDIX No. 43.

LIST OF SEEDS ISSUED FROM EXCHANGE BUREAU 1932/33

Local Correspondents	No. of Species	Foreign Correspondents	No. of Species
Hebrew University, Jerusalem.	37	Conversator of Forests, Cyprus.	14
Girls Nurseries, Jerusalem.	21	Mr. Kilmer, New Jersey, U.S.A.	1
Horticultural Station, Jerusalem.	1	Mr. R. A. Smith, Memphis, U.S.A.	1
Kadoorie Arab Agricultural School Tulkarm.	3	University of Kentucky, U.S.A.	1
Agricultural School, Mikveh Israel.	32	Mr. B. Smith, Memphis, U.S.A.	33
Seminaire St. Anne, Jerusalem.	1	Department of Agriculture, Washington U.S.A.	4
Government House.	2	Sir James Burnett, England.	15
Total:	97	Total:	72

APPENDIX 44.

FOREST FIRES — 1931—32 AND 1932—33.

Forest Range	Date	Locality	Cause	Damage
Haifa	17. 6.31	Jalami Forest Reserve Serial No. 8.	Unknown	119 trees burnt on 1 dunam
"	2. 8.31	Sheikh Breik—Reputed Private Forest.	Unknown	An area of 60 dunams was burnt—100 trees damaged.
"	30.12.31	Dalieh Forest Reserve Serial No. 9.	Shepherds lighting fire for cooking	2 dunams were burnt embracing many trees.
"	15.11.31	Abu Gharazeh—Ain Hod Forests—Reputed Private Forest.	Shepherds lighting fire for cooking	2 dunams—70 trees burnt.
"	24. 3.33	Mt. Carmel, Haifa—Reputed Private Forest.	Uncertain—but it is appears that is was caused by children.	3 dunams of land—950 trees burnt.
Acre	21.10.32	Wadi El Karn Forest Reserve No. 6.	Unknown	6,000 trees and shrubs burnt to ground level about 125 dunams.
Nazareth	17. 6.31	Roadside Planting—Balfouria Colony—Owned by the Colony.	Unknown	About 1,200 square metres 200 metres in length and 4—6 metres in width. No serious damage to trees resulted only low branches were burnt and the fire was extinguished.
Safad	18. 9.31	Abu Shiha—Faradeh Village—Reputed Private Forest.	Caused by Mohammad Said El Smani and his brother for the intention of clearing the land for cultivation.	4—5 dunams—about 30 trees were burnt.
"	10.12.31	Okar—Reputed Private Forest	Caused intentionally to clear land for cultivation.	8 dunams — about 200 small trees and branches were burnt.
Beisan	27.10.31	Zoar Tabani Forest Reserve (Proposed)	Fire caused by Ehsein Mohammad Sahayineh of Bashatri Arab	About 50 dunams of land of natural Tamarix trees were burnt.
Jerusalem	29.10.31	Kiriath Enavim of the Jewish Agency	Caused by Subhi Abdul Muti of Beit Nakuba Village.	10 dunams—733 Pinus halepensis planted in 1925 were destroyed.
Hebron	20.10.31	Jebel El Sardi Forest Reserve No. 76.	Unknown	4 dunams—170 oak trees damaged.

APPENDIX 45.

LIST OF PLANT MATERIAL COLLECTED OR PURCHASED LOCALLY OR PURCHASED FROM ABROAD DURING 1931/33.

A. 1931/32. — COLLECTED LOCALLY.

Species	Quantity
Schinus terebinthifolius	75 grams
Trifolium stellatum	300 grams
Trifolium scutatum	50 grams
Trifolium fragiferum	200 grams
Trifolium campestre	50 grams
Trifolium resupinatum	20 grams
Trifolium purpureum	15 grams
Trifolium tomentosum	10 grams
Trifolium clypeatum	5 grams
Medicago hispida	10 grams
Fraxinus oxycarpa	180 grams
Cercis siliquastrum	245 grams
Rhus semi-alata	180 grams
Bauhinia purpurea	60 grams
Gleditschia triacanthos	50 grams
Rhamnus alaternus	10 grams
Spartium junceum	25 grams
Acacia seyal	280 grams
Acacia cyanophylla	2 kgs. 450 grams
Acacia farnesiana	1 kg. 320 grams
Acacia lophantha	1 kg. 700 grams
Acacia cyanophylla	2 kgs. 550 grams
Cupressus sempervirens	850 grams
Acacia cyanophylla	40 kgs.
Eucalyptus rostrata	4½ kgs.
Cupressus sempervirens	950 grams
Acacia lophantha	870 grams
Zizyphus spina-christi	7 kgs.
Parkinsonia aculeata	5½ kgs.
Cordia myxa	8 kgs.
Balanites aegyptiaca	8½ kgs.
Crataegus pyracantha	30 grams
Robinia pseudoacacia, bessoniana	300 grams
Acacia cyclopis	700 grams
Robinia pseudoacacia	2 kgs. 750 grams
Ailanthus glandulosa	4 kgs.
Retama roetam	670 grams
Grevillea robusta	110 grams
Eucalyptus rostrata	500 grams
Eucalyptus cornuta	50 grams
Ceratonia siliqua	500 grams
Brachychiton sp	1 kg.
Schinus terebinthifolius	580 grams
Styrax officinalis	750 grams
Paliurus aculeatus	100 grams
Schinus molle	1 kg. 150 grams
Cupressus pyramidalis	650 grams
Pistacia mutica	1½ kgs.
Eucalyptus lehmanii	75 grams
Cercis siliquastrum	590 grams
Acacia cyanophylla	13 kgs.
Gleditschia sp	1 kg. 700 grams
Platanus sp	900 grams
Schinus molle	½ kg.
Celtis australis	2½ kgs.
Crataegus azarolus	650 grams
Cupressus horizontalis	1½ kgs.
Cupressus pyramidalis	6 kgs.
Ceratonia siliqua	6 kgs.
Ailanthus glandulosa	5½ kgs.
Pistacia lentiscus	1½ kgs.

Species	Quantity
Phillyrea media	175 grams
Ligustrum japonicum	70 grams
Cupressus arizonica	250 grams
Washingtonia filifera	1 kg.
Celtis australis	2 kgs.
Dalbergia sissoo	1 kg.
Quercus aegilops	174 kgs.
Laurus nobilis	900 grams
Grevillea robusta	300 grams
Ficus nitida	30 cuttings
Myrtus communis	100 grams
Prunus amygdalus	2½ kgs.
Populus euphratica	50 cuttings
Tamarix spp.	50 cuttings
Salix spp.	50 cuttings
Ficus benjamina	30 cuttings
Ficus macrophylla	30 cuttings
(Tamarix spp.)	(50 cuttings)
Ficus bengalensis	30 cuttings
Ficus elastica	20 cuttings
Ficus sycamorus	50 cuttings
Sophora japonica	½ kg.
Casuarina equisetifolia	2 kgs. 300 grams
Rhus semi-alata	30 grams
Mandragora officinarum	200 grams
Eucalyptus cladocalyx	20 grams
Balanites aegyptiaca	29 kgs.
Trifolium fragiferum	300 grams
Acacia cyanophylla	50 kgs.
Ampelopsis spp.	500 grams

Total 307 kgs. 545 grams of seed and 510 cuttings

B. 1932/33. — COLLECTED LOCALLY.

Ailanthus glandulosa	9½ kgs.
Cercis siliquastrum	90 grams
Rhus semi-alata	750 grams
Ceratonia siliqua	32 kgs.
Robinia pseudoacacia	580 grams
Phillyrea media	80 grams
Brachychiton spp.	260 grams
Thuja orientalis	10 grams
Crataegus pyracantha	80 grams
Cupressus pyramidalis	3 kgs. 350 grams
Cupressus horizontalis	3 kgs. 200 grams
Celtis australis	5 kgs.
Casuarina spp.	1 kgs. 250 grams
Cercis siliquastrum	1 kgs. 500 grams
Dalbergia sissoo	2 kgs. 200 grams
Acacia lophantha	1 kgs. 540 grams
Ceratonia siliqua	10 kgs. 120 grams
Cistus villosus	700 grams
Arbutus andrachne	1 kgs. 700 grams
Pistacia terebinthus	150 grams
Styrax officinalis	720 grams
Crataegus azarolus	1 kg. 350 grams
Acacia seyal	95 grams
Zizyphus jujuba	1 kg. 380 grams
Laurus nobilis	3 kgs. 950 grams
Grevillea robusta	180 grams
Pistacia mutica	730 grams
Brachychiton spp.	260 grams
Cercis siliquastrum	490 grams
Phillyrea media	400 grams
Robinia pseudoacacia	500 grams

Species	Quantity	Remarks
Rhus coriaria	220 grams	
Acacia longifolia	220 grams	
Acacia saligna	190 grams	
Bauhinia purpurea	850 grams	
Paliurus aculeatus	170 grams	
Gleditschia triacanthos	970 grams	
Spartium junceum	100 grams	
Cassia spp.	135 grams	
Nicotiana glauca	35 grams	
Acacia cyclopis	45 grams	
Retama roetam	1 kg. 210 grams	
Tamarix articulata	670 grams	
Arbutus andrachne	1 kg. 400 grams	
Calycotome villosa	400 grams	
Pistacia lentiscus	410 grams	
Rhamnus Palaestina	820 grams	
Albizzia julibrissin	1 kg. 820 grams	
Zizyphus vulgaris	80 grams	
Quercus coccifera	2 kgs. 50 grams	
Robinia pseudoacacia	1 kg. 125 grams	
Rhus coriara	3 kgs. 70 grams	
Laurus nobilis	4 kgs. 410 grams	
Olea europea	4 kgs. 50 grams	
Celtis australis	1 kg. 950 grams	
Schinus molle	750 grams	
Laurus nobilis	1 kg. 800 grams	
Cupressus pyramidalis	700 grams	
Pistacia terebinthus	880 grams	
Cercis siliquastrum	250 grams	
Tulipa montana	50 bulbs	For Government House
Iris atropurpurea	1 sack bulbs	” ” ”
Retama roetam	70 plants	” ” ”
Cyclamen persicum	2 sacks bulbs	” ” ”
Narcissus 'azetta	2 sacks bulbs	” ” ”
Nymphaea alba	10 Rhizomes	” ” ”
Lupinus pilosus	309 kgs.	” ” ”
Scabiosa prolifera	300 grams	” ” ”
Salvia horminum	300 grams	” ” ”
Chrysanthemun coronarium	300 grams	” ” ”
Statice sinuata	300 grams	” ” ”

Total 425 kgs. 105 grams of seed; 5 sacks of bulbs; 10 rhizomes and 70 living plants.

Where not otherwise indicated the material collected considered of seeds.

C. PURCHASED LOCALLY — 1931/32.

Kind	Quantity	Value £P. Mils	Remarks
Pinus pinea	3072 kgs.	180.960	Purchased in the Lebanon
Juglans regia	10 kgs.	0.400	
Total	3082 kgs.	181.360	

D. PURCHASED LOCALLY — 1932/33.

Pinus pinea	1500 kgs.	42.145	Purchased in the Lebanon
Juglans regia	67 kgs.	3.080	
Ceratonia siliqua	38½ kgs.	1.050	
Total	1605½ kgs.	46.275	

E. PURCHASED ABROAD — 1931/32.

Kind	Quantity	Value
Cedrus deodara	1 kg.	140.0 francs
Cupressus arizonica	1 kg.	290.0 "
Cupressus macrocarpa	1 kg.	120.0 "
Cupressus lusitanica	250 grams	21.0 "
Cupressus benthami	250 grams	53.6 "
Pinus canariensis	2 kgs.	190.0 "
Pinus insignis	2 kgs.	244.0 "
Sequoia gigantea	50 grams	110.0 "
Sequoia sempervirens	50 grams	30.0 "
Acer negundo	100 grams	3.3 "
Acacia pycnantha	100 grams	14.0 "
Acacia saligna	100 grams	7.5 "
Total	7 kgs. 900 grams	1224.0 francs

F. PURCHASED ABROAD — 1932/33.

		£. s. d.
Pinus insignis	7 kgs. 200	5.12. 0.
Pinus canariensis	7 kgs. 200	4. 5. 4.
Cupressus arizonica	1 kg. 800	2.16. 0.
Cupressus macrocarpa	1 kg. 800	1. 7. 0.
Cedrus deodara	1 kg. 800	2. 8. 0.
Cedrus atlantica	1 kg. 800	1. 0. 0.
Robinia pseudo-acacia	18 kgs.	2. 6. 8.
Eucalyptus corynocalyx	50 grams	48.0 francs
Eucalyptus crebra	25 grams	37.5 "
Eucalyptus hemiphloea	25 grams	32.5 "
Eucalyptus leucoxylon	25 grams	24.0 "
Eucalyptus longifolia	25 grams	24.0 "
Eucalyptus piperita	25 grams	27.4 "
Eucalyptus regnans	50 grams	75.0 "
Eucalyptus resinifera	25 grams	24.0 "
Eucalyptus tereticornis	25 grams	24.0 "
Acer negundo	100 grams	2.0 "
Acer pseud-platanus	100 grams	1.0 "
Acacia pycnantha	1 kg.	110.0 "
Acacia saligna	1 kg.	70.0 "
Tetraclinis articulata	1 kg. 400	120.0 "
Total	43 kgs. 475 grams	£P. 19.750 plus 619.5 francs.

APPENDIX No. 46.

STATEMENT OF EXPENDITURE — FOREST SERVICE — 1931/32.

I. PERSONAL EMOLUMENTS

Sub-Head	Estimates £P. Mils	Actual Expenditure £P. Mils	Balance £P. Mils	Cost of Living Allowance £P. Mils	Total £P. Mils
Senior Technical Service	1,575.000	1,575.000	—	105.000	1,680.000
Forest Surveyors	339.000	339.000	—	30.000	369.000
Forest Rangers	1,882.000	1,882.000	—	155.000	2,037.000
Clerical Officers	502.000	502.000	—	48.833	550.833
Forest Guards	2,520.000	2,520.000	—	—	2,520.000
Forest Gardeners (including Salary of 1 Head Gardener and 3 other Gardeners at Government House.)	1,104.000	1,103.200	0,800	—	1,103.200
Messengers and Cleaners.	66.000	66,000	—	—	66.000
Total:	7,988.000	7,987.200	0.800	338,833	8,326.033
II. OTHER CHARGES.					
Afforestation	(x)3,800.000	3,555.493	244.507		
Upkeep of Nurseries	800.000	771,366	28.634		
Rent of Nurseries	28.000	7.000	21,000		
Demarcation of Forests	350.000	346.798	3,202		
Silvicultural Research (including Salary of Silvicultural Assistant)	200.000	191.254	8.746		
Transport and Travelling	2,020,000	2,017.817	2.183		
Forage	27.080	26.614	0.466		
Lighting and Heating	3.000	2,450	0.550		
Upkeep of Government House Grounds	400.000	398.692	1.308		
Grant-in-Aid of Sericultural Experimental Work (including Salary of Sericultural Instructor).	450.000	448.315	1,685		
Draught Animals, Carts and Harness	10.000	5.000	5.000		
Departmental Extraction of Forest Produce	100.000	78,200	21.800		
Total:	8,188.080	7,848.999	339.081		7,848.999
				GRAND TOTAL	16,175.032

(x): Includes Special Warrant of £P. 800.

APPENDIX No. 47.

STATEMENT OF EXPENDITURE — FOREST SERVICE — 1932-33.

I. PERSONAL EMOLUMENTS.

Sub-Head	Estimates £P. Mils	Actual Expenditure £P. Mils	Balance £P. Mils	Cost of Living Allowance	Total £P. Mils
Senior Technical Service	1,586.000	1,586.000	—	60.000	1,646.000
Forest Surveyors	335.000	335.000	—	16.000	351.000
Forest Rangers	1,900.000	1,900.000	—	83.000	1,983.000
Clerical Officers	520.000	520.000	—	26.000	546.000
Head Gardener (Govt. House)	180.000	180.000	—	8.000	188.000
Botanical and Silvicultural Assistant.	120.000	120.000	—	6,000	126.000
Forest Guards	2,596.000	2,561.000	35.000	—	2,561.000
Forest Gardeners (including 3 gardeners at Government House).	936.000	927.000	9,000	—	927.000
Messengers and Cleaners	93.250	93.250	—	—	93.250
Total:	8,266.250	8,222,250	44.000	199,000	8,421,250
II. OTHER CHARGES.					
Afforestation	4,000.000	3,999.556	0.444		
Upkeep of Nurseries	800.000	799,790	0.210		
Rent of Nurseries.	20.000	8.000	12.000		
Demarcation of Forests	300.000	299.992	0.008		
Silvicultural Research	100.000	99.795	0.205		
Transport and Travelling	2,000.000	1,999.990	0,010		
Forage	35.554	34.859	0.695		
Lighting and Heating	25.000	17,925	7.075		
Upkeep of Government House Grounds	400.000	399.979	0.021		
Grant-in-Aid of Sericultural Experimental Work (including Salary of Sericultural Instructor).	650.000	649.703	0.297		
Camp Equipment	50,000	36.625	13.375		
Olive Propagation	(x) 240.000	207.920	32.080		
Departmental Extraction of Forest Produce.	100,000	68.630	31.370		
Draught Animals, Carts and Harness	15.000	0.750	14,250		
Contigencies	36.062	27.391	8.671		
Uniforms	275,000	257.817	17.183		
Total:	9,046.616	8,908.722	137.894		8,908,722

GRAND TOTAL: 17,329.972

(x): New Item under Special Warrant.